Introducing The Entablature™, the first outdoor luminaire that allows you to define its character within the architectural scheme. As a shy personality, The Entablature has a distinguished simplicity that can blend with its surroundings and become integral with the architecture. As an extrovert, the luminaire can be reconfigured with many different entablatures to emulate the distinctive features and accent colors that often become the unique signature of building exteriors. Whatever the choice, you can be sure that you have specified a luminaire of unprecedented quality and performance because it is Kim. The Entablature is available in two sizes, four light distributions, HID lamp modes from 70W to 400W, and a host of features such as die cast construction and no-tool maintenance. The shoebox has been redefined!
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Improve your creative vision. Create stunning effects with Manning Lighting—like oohs and aahs. Manning offers a huge selection of pendant lighting, ceiling lighting and wall sconces, all available with energy-efficient lamps and ballasts. So many designs, so many ideas. Call 414-468-2184 for your copy of the new Manning catalog. Then read it and watch the lights go on.
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BECAUSE LIFE’S TOO SHORT
THERE'S A NATURAL RESPONSE TO THE DOMINANT SOURCE OF LIGHT.
Even among a multitude of options, the moth, without fail, flies to the dominant source of light. In much the same way, everyone from specifiers to contractors turns to our family of companies — Columbia, Prescolite and Moldcast — for superior lighting solutions. Together, we stand out as the dominant source in the lighting industry. We offer intelligent choices for virtually any application, indoor, outdoor or emergency. Commercial, residential or industrial. With the assurance of dependability, quality workmanship, proven performance, ease of installation, and the convenience of working with one reputable, reliable source. Contact your Columbia-Prescolite-Moldcast representative today. Once you turn to the dominant source of light, everything dims by comparison.
Welcome to *Architectural Lighting*’s Lightfair issue and the second issue celebrating our 10th anniversary. Together, we have weathered a stormy decade and emerged stronger than ever facing many new opportunities and challenges.

Some of the big changes in the past 10 years of course included the recession and construction slump of late ’80s/early ’90s. And yet new legislation—such as the National Energy Policy Act and the Americans With Disabilities Act—and accelerating technology have demanded increased professionalism and time from lighting designers. Owners began to realize more than ever the role quality lighting plays in productivity—ironically, this education came after years of retrofits with energy savings as the primary goal. This demand for lighting expertise will only become more important as computers proliferate, new workplace approaches such as hoteling and virtual officing emerge, and as facility managers connect workplace design strategies with business strategies. Hopefully, no more will somebody consider merely adding some decorative sconces on a wall to be “quality lighting.” And no more will quality lighting design be confused with “decoration.”

These are the times we work in.

Opportunities abound. Themed environments, renovations, exterior lighting, productivity-sensitive interior office lighting, and special applications in emerging niche markets such as videoconferencing offer lucrative projects to today’s lighting professional. And the designer’s tool belt could probably wrap around a school bus today with the advancement in traditional technologies plus new controls, compact fluorescents, custom fixtures, smaller fixture designs, low-voltage fixtures, energy-efficient products and fiber optics. Sounds good, but there’s no free ride here—designers must meet higher expectations with greater expertise. Owners want more on tight budgets and with code and energy constraints, demanding every drop of creativity we can muster. The designer often must do a great sales job and take time to show owners more options within the budget or new products and designs that justify a larger budget. The designer must balance billable time with time spent examining new products.

Architectural lighting designers today are certainly a leaner, tougher, smarter breed. *Architectural Lighting* is proud to have been with you over the decade and we thank you for taking the time to read our magazine issue after issue, year after year.

Our mission is to showcase the industry’s leading projects, illuminate new techniques and approaches, and be a marketplace of quality products and services. In every page, we try to offer you value. And as a special bonus in this issue, some of today’s leading designers offer their perspectives on the past 10 years in the design features. So with a nod of thanks to our predecessors Charles Linn and Wanda Jankowski, the *Architectural Lighting* team—myself, Christina Trauthwein, Lyndon Lorenz (who delivered the stunning redesign of the magazine in January), and all the rest here at the Commercial Design Network—looks forward to another 10 years of offering news and information that can help you succeed and grow professionally.

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A.L. IN THE NEWS...

Architectural Lighting Editor-in-Chief Craig DiLouie recently moderated a distinguished panel of lighting designers at the University of Delaware's Hotel, Restaurant & Institutional Management program, which addressed issues surrounding "The Challenge of Hospitality Lighting Design."

The Hospitality Roundtable Program is being broadcast for the HRIM course "Property Management" on Mind Extension University, part of the Jones Education Cable Networks.

Lighting design issues discussed during the roundtable included the role that atmosphere plays in the success of hotel and restaurant interiors and the different ways that lighting designers meet the challenge; the application of lighting design to conference and meeting room spaces; lighting design for guest security and energy conservation; and the effects of lighting design on the quality of guest experiences.

The panel included Candace Kling IALD, C. M. Kling & Assoc.; Gary Garofalo, Lighting Design Collaborative; Lee Waldron IALD, Grenald Waldron Assoc.; and Al Borden IV, IALD, The Lighting Practice. DiLouie and Paul Sestack AIA, University of Delaware were the moderators.

PASS & SEYMOUR/LEGRAND ACQUIRES WATTSTOPPER

Pass & Seymour/Legrand, the manufacturer of wiring devices headquartered in Syracuse, NY, recently announced the acquisition of The Wattstopper, the occupancy sensor maker based in Santa Clara, CA.

According to Legrand, a company with $2 billion annual sales, its position in the U.S. will be strengthened while The Wattstopper will gain access to global channels of distribution to sell its passive infrared, ultrasonic and dual-technology sensors.

The Wattstopper's management will stay on and run the company independently.

$100,000 RAISED FOR NEW SCHOOL

Architect Stanley Tigerman, co-founder of Archeworks, the Chicago design school devoted to socially conscious design programs, announced that $100,000 was raised at a recent benefit to cover the school's operating costs and scholarship fund. Founded in 1994, Archeworks offers a one-year diploma in alternative architecture and design.

The main draw of the event, which was held at the school and co-chaired by Judith Neisser, Beverly Meyer and Kixie Fieldman, was an auction of 21 drawings and other gifts from renowned architects, including New York architect Philip Johnson and Chicago's Helmut Jahn and Ronald Knueck, all three of whose drawings sold for $5,000 each.

INTERNATIONAL CONTRACTS

AM Partners, Inc., a Honolulu-based architecture and design firm, has been awarded the contract to design the 35-story mixed-use high-rise building in Guangzhou, People's Republic of China. This $120 million project, named Keep Mount Plaza, is owned and developed by Keep Mount Holdings, Ltd. of Hong Kong.

Keep Mount Plaza will provide more than 1.1 million sq.ft. to accommodate leasable retail, restaurant and office space, as well as parking and common areas. The building will rise dramatically above the largest subway station in Asia.

Construction is slated to begin in November of this year.

MYTECH RECEIVES INVESTMENT

Mytech Corporation, the Houston-based manufacturer of automatic lighting, has closed a round of venture financing from Growth Capital Partners. The company is best known for the development of an automatic light switch based on a digital signal processing sensor.

Growth Capital Partners invested in Mytech because the company met its criteria, one of which was a large potential market. The Electric Power Research Institute estimates that American companies waste $4 billion each year by leaving office lights and equipment on when not needed. According to Building Design & Construction, only 1.2 percent of the nearly five million commercial buildings in the U.S. now have automatic lighting installed. Other criteria included aggressive growth objectives, innovative proprietary products and leadership of an "outstanding entrepreneur." In 1992, Mytech earned a spot on Inc. Magazine's list of 500 fastest-growing private companies.
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Fiberstars' illuminators are engineered to produce clean light with none of the infrared and ultraviolet wavelengths that damage delicate fabrics and fade sensitive pigments. Light sources with color temperatures from 3000°K to 5600°K are available. Fiberstars' fiber optic lighting is also ideal for enclosed spaces where the heat of conventional lighting is undesirable. Use Fiberstars to preserve the color of sensitive items.

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Fiberstars offers an array of fiber tubing sizes with fiber counts ranging from as few as three fibers to as many as 150. Select the tubing size that matches your application needs – more fiber equals more light. Fiberstars uses only the purest optical grade polymer fibers in manufacturing its fiber tubing. Fiberstars' polymer fibers have been shown to be superior to any other fiber in efficiency, color rendering and durability.

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Fiberstars is a pioneer in fiber optic end-emitting applications with Fiberescent™ recessed downlights and FiberScape™ landscape lighting. Our patented BritePak™ side-emitting fiber optic tubing is the performance standard of the industry. BritePak is processed on proprietary equipment of our own design, yielding unsurpassed quality and consistency. Fiberstars has a state of the art solution for your lighting application.

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WE ARE TRULY ENLIGHTENED OURSELVES.

For years, Lighting Corporation of America companies have enjoyed shining success. With this privilege of success comes an equal responsibility to lighten the loads of people who are struggling around us. So, while we light the way to excellence in our industry through outstanding products, we commend the shining examples of humanity who permeate our companies. People like Mary Wong of Prescolite. As part of the California Rescue Dog Association, she and her dog Tellus have given more than one thousand volunteer hours to rescue training and actual searches for missing persons. She hopes that someday she can return a lost child, safe and sound, to the parents’ waiting arms. Lighting Corporation of America. We cast a new light on life.
SMALL COMPANY MAKES MARK IN FIBER OPTICS

In April 1993, two engineering graduates of Virginia Tech founded Lightly Expressed, which now designs, develops and manufactures fiber-optic lighting systems for museums, commercial applications and high-end residential architecture in Salem, VA. With the assistance of the Roanoke Chamber of Commerce and the Small Business Development Center, the company recently acquired a funding grant from the Virginia Economic Bridge Initiative. Jon West and William Leaman, founders of Lightly Expressed Ltd., have also been awarded a patent for their fiber-optic lighting system, now used in such projects as the National Christmas Tree Topper in Washington, D.C., the physics gallery at the Science Museum in Western Virginia and the Logan Museum of Anthropology in Wisconsin (see cover story, January/February 1996).

NEW HOME FOR ESI

Energy Savings, Inc., a manufacturer of electronic ballasts that sparked an array of new small fixture designs, moved to a new facility in Schaumburg, IL in November 1995. The company's new 35,000-sq.-ft. home accommodates its automated factory, engineering and expanded customer support group.

WALDMANN GETS ISO

Waldmann Lighting Company, the Wheeling, IL-based manufacturer of ergonomic task lighting, has achieved certification of the ISO 9001 Standard. The ISO series of certifications assures that quality processes and procedures are in place governing product design, development, production and customer service.

MOODY RAVITZ ACQUIRES PARADOX

Moody/Ravitz Design Partners, Inc. has acquired Paradox Lighting Design, with the new operation being renamed Moody Ravitz Hollingsworth Lighting Design, Inc. of Hollywood, CA. As implied by the new name, Paradox founder Dawn Hollingsworth will join James Moody and Jeffrey Ravitz, who combine more than 50 years of experience in the entertainment industry, as a principal. According to Moody, CEO, the acquisition positions the company to expand from entertainment into architectural and themed markets.

CORRECTION

Rob Johnson, The Design Department was inadvertently omitted from the project credits in the January/February 1996 issue of Architectural Lighting ("Winner’s Circle," pages 30-31). He was the interior designer for Grand Casino Coushatta. Architectural Lighting regrets the error.
People who don’t buy a product should benefit from it too.

I’m Michiel van Dam, from the Lighting division of Philips Electronics.

We’ve created a fluorescent tube with so little mercury, it meets the U.S. EPA test for nonhazardous waste.* In fact, it’s the first fluorescent to meet this EPA standard.

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* The U.S. Environmental Protection Agency (EPA) test, Toxic Leaching Characteristic Procedure, 1990. Consult local laws and regulations, which may vary. © 1995 Philips Electronics North America Corporation

Let’s make things better.
The Energy Efficiency Act of 1992 was established to eliminate the most popular low-cost 40W fluorescent lamps then on the market, with the nearest alternative being the 34W energy-saving lamp.

The National Electrical Manufacturers Association (NEMA), however, warns that this change may result in outages and ballast failures in residential and small-commercial applications. There are a large number of commercial, residential and shoplight fixtures frequently used in small offices, workshops, kitchens, basements and garages which contain low power factor (lag) ballasts not designed for use with 34W lamps.

According to NEMA, the increased current and wattage that results causes increased temperatures that may lead to lamps cycling on and off, premature ballast failure, poor starting and lamp flickering. To avoid these problems, NEMA recommends use of 40W lamps unless the ballast label specifically allows use of 34W or 35W energy-saving lamps.

For more information, call NEMA at (703) 841-3269.

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**GREEN LIGHTS**

Green Lights is the Environmental Protection Agency’s voluntary flagship program which supports large American corporations’ efforts to reduce energy consumption, increase profitability and prevent pollution through upgrading their lighting systems. While this program was introduced in 1991, the door is at its widest to the design community. According to Green Lights, designers are key to achieving the desired aesthetics and quality lighting while promoting energy efficiency. To get involved, designers can complete the Lighting Upgrade Workshop and pass the Surveyor Ally exam. Designers should note that the Memorandum of Understanding signed between the corporation and Green Lights not only entails upgrading existing lighting systems, but meeting energy-efficient lighting practices (ASHRAE/IES 90.1) in new construction. Green Lights proposes there is much more to efficient lighting than reducing costs, and much more to lighting design than creating the right visual environment.

According to Green Lights, 2,045 participants have committed more than 1 billion sq. ft. to efficient lighting, saving 172 million dollars in utility costs and keeping 3.3 billion pounds of air pollution out of the environment.

Call Green Lights at (202) 775-6650 or fax (202) 775-6680.
Lighting should be designed for making people visually comfortable in a work place where information and data are being processed in different ways, where the focus must be on performance, getting the job done quickly, accurately, precisely.
HUBBELL LIGHTING ACHIEVES NIST ACCREDITATION

Hubbell Lighting, an ISO-9002 registered supplier of commercial, industrial and residential light fixtures and related equipment headquartered in Orange, CT, announced that its photometric lab in Christiansburg, VA has been accredited by the National Voluntary Laboratory Accreditation Program's Energy-Efficient Lighting Program. The accreditation extends to outdoor fluorescent fixtures, roadway fixtures, indoor fluorescent fixtures, indoor HID fixtures and floodlights using incandescent or discharge lamps.

The Energy-Efficient Lighting Program was established to improve industry credibility when making energy efficiency claims, accrediting testing labs that are competent in performing specific tests.

EXPERIMENT ON "DESIGN INCENTIVE FEES"

Green Development Services (GDS) at Rocky Mountain Institute of Snowmass, CO is embarking on a national experiment to demonstrate "design incentive fees" that can help architects, engineers and building owners create extremely energy efficient buildings. This plan is crafted to reward design professionals for what they save, not for what they spend—thus aligning designers' interests firmly with owners' interests.

According to the GDS, architects and engineers should be paid a bonus if a building exceeds energy performance targets set in an initial agreement with the client (determined by computer energy models), and should be penalized if it falls short—sort of an energy service company's performance contract for designers of new buildings.

For more information, call (970) 927-3807.

PHILIPS LIGHTING NAMED GREEN LIGHTS ALLY OF THE YEAR

Philips Lighting Co. has been selected the 1996 Green Lights Manufacturer Ally of the Year by the U.S. Environmental Protection Agency (EPA).

The award acknowledges Philips' ongoing environmental initiatives, which include lighting upgrades, education outreach and promotional efforts both within the company and with customers. Philips manufactures environmentally responsible lighting, such as ALTO low-mercury technology.

In addition, several of the company's customers will receive Green Lights Awards for their environmental efforts in conjunction with Philips.

LEVITON BROCHURE HIGHLIGHTS 1996 NEC® CHANGES

Leviton Manufacturing offers a free pamphlet that describes over 30 of the most important revisions to the 1996 National Electrical Code®. Codes cover residential, commercial and industrial applications including bathrooms, kitchens, basements, outdoor sites, equipment rooms, hotels, hospitals and more.

Leviton collaborated with recognized code expert Mike Holt in producing this pamphlet. To obtain a copy, call (800) 323-8920, or fax (800) 832-9538.
Osram Sylvania, the Danvers, MA-based leading lamp manufacturer, has named Anthony Pucillo, formerly Vice President for General Lighting at the company's Danvers, MA office, to the post of president of Osram Sylvania Ltd. / Ltée., headquartered in Mississauga, Ontario. Pucillo's responsibilities for the Canadian business includes marketing, sales and customer support for all lighting product lines, Sylvania Lighting Services in Canada, and the manufacturing facility in Drummondville, Quebec.

Philips Lighting Company, the Somerset, NJ-based leading lamp manufacturer, has named L.W. (Larry) Wilton to the post of president of the company's North American lighting operations. Wilton will oversee manufacturing, distribution, marketing and sales of more than 4,000 Philips lighting products.

Wilton succeeds Nico Bruijsel, who in April 1996 assumed general management of Philips Japan upon the retirement of H. Th. Hoksbergen.

Litetronics International, Inc., the Alsip, IL-based manufacturer and marketer of value-added specialty lighting products, based in Alsip, IL, has named Mike Schaechter executive VP and CFO.

This promotion caps nine years of executive management experience at Litetronics International. In his new role at Litetronics, Schaechter will oversee the day-to-day operations of the company's international business.

Litetronics is a subsidiary of DuroLite International Inc. and sister company to Duro-Test Lighting.

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Hydrel/Sill 7800 Series

Hydrel is the exclusive licensee of Franz Sill of Germany to produce their luminaires in North America. The Series 7800 and larger 7801 flood lights offer a family of precision luminaires in a compact, high performance European design to 400 watts in popular distributions.
FIBERSTARS NAMES GARET TO BOARD POST

Fiberstars Inc., the Fremont, CA-based manufacturer of fiber-optic lighting systems, has elected B.J. Garet to fill a vacant seat on its board, bringing its number of directors up to nine. Garet, retired, was previously chairman of Hanson Lighting Group and CEO of the company’s U.S.I. Lighting subsidiary from 1984 to 1993.

LIVING LEGEND HONORED

Lillian Barber was recently honored at a gala event, sponsored by Haut Decor, to celebrate her as South Florida’s Living Legend. Barber, who has been a much-respected member of the interior design community for more than 50 years, has played a key role in the lighting industry as well. Some of her many accomplishments include:

- Developed and coordinated first course in lighting design for interior designers entitled “Designing with Light,” a five-week series of lectures, workshops and seminars.
- Developed series of seminars in “Creative Lighting Practice for Space Planners, Designers and Architects,” under the auspices of lighting design firm Gerstoff, Nuckolls and Warfel.
- Won first National Award from the Illuminating Engineering Society (IES).
- Helped develop theatrical lighting for model rooms designed by David Bell, Director of Bloomingdale’s Decorating Department.
- Presented paper on “Lighting for Aging Vision” to IES Conference.

A.L. PROMOTIONS

Christina Trauthwein was recently promoted to Executive Editor, Architectural Lighting. Trauthwein will continue to manage the design features, working with architects and lighting designers to develop articles that show design innovation and quality. In addition, she is responsible for the production of the magazine. Trauthwein sits on the IALD Awards Committee and is co-presenter at the Association’s annual event at Lightfair.

Lyndon Lorenz has signed on with the Architectural Lighting team as creative director. Lorenz is also creative director for Facilities Design & Management, which, since 1993, has received two consecutive Ozzie Awards for best overall design. Lorenz travels monthly to supervise Facilities’ photo shoots and to meet with facilities managers in their working environments. He was instrumental in the redesign of Architectural Lighting.
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LIGHTING GOES AIRBORNE

The French Technology Press Office recently announced that Airstar, a French manufacturer of the first portable airborne illumination balloon, now offers Solarc, a complete range of large balloons that provide lighting over a larger area. Solarc is a tethered helium-filled balloon fitted with metal halide lamps inside, providing 5600K HID lighting for indoor and outdoor spaces such as industrial job sites, emergency scenes, night road and construction, theme parks, sporting events, film sets, parties and other applications. Uniform illumination, evenly distributed by a diffusing cover, can blanket an area from 43,000 to 129,000 sq. ft. This cover can be marked with colors, text or a logo.

For more information, contact the French Technology Press Office by faxing them at (312) 222-1237 or contact Airstar directly at (33) 76-62-7185, fax (33) 76-25-1577.

LIGHT HELPS CANCER PATIENTS

Earlier this year, the New York Times reported that throat cancer patients will soon be able to swallow on their own with the help of Photofrin, a drug/light-based treatment newly approved by the U.S. Food & Drug Administration.

According to the American Cancer Society, 10,900 Americans died in 1995 of throat cancer, which slowly constricts victims’ throats until they cannot eat or swallow saliva.

Photofrin, manufactured by QLT Phototherapeutics Inc. of Vancouver, British Columbia, is a drug that is injected into the patient. Bright light is then shown on the tumor via miniature fiber optics, activating the drug to produce free radicals that kill the tumor cells.

Although long-term studies will reveal whether or not the treatment will help the cancer patients live longer, it does improve their quality of life by allowing them to swallow.
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SCHEDULED EVENTS 1996

April 21-27 World Light Show-Hannover Fair '96; Hannover, Germany. Call (609) 987-1202.

April 23-26 A/E/C SYSTEMS Mexico '96; Mexico City. Call (800) 451-1196.

May 4 IESNA Technical Knowledge Exam (TKE); various locations nationwide (USA). Call (800) 525-8555.

May 14-16 Lightfair International; Moscone Center, San Francisco. Call (404) 220-2217.

June 10-12 NeoCon 96 World's Trade Fair; World Trade Center, Chicago. Call (312) 527-7098.

June 17-20 Construction Technology 96—The First Annual Conference and Exhibition for New Technologies in the Building Industry; Anaheim Convention Center, CA. Call (800) 451-1196 or (610) 458-7070.

June 20-22 World Lighting Fair in Tokyo '96; Yokohama Pacifico Exhibition Hall. Call 011-81-3-3706-5687.

August 5-7 IESNA Annual Conference; Renaissance Cleveland Hotel, Cleveland. Call (212) 248-5000 x117.


October 19-21 ASLA Annual Meeting and Expo; Los Angeles. Call (202) 686-8343.

November 6-9 Hong Kong International Lighting Fair; Hong Kong Convention and Exhibition Centre. Call (852) 2827-5121.


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- Energy-Efficient Lighting: April 25-26; November 7-8
- Computer Software: June 6-7; September 5-6; December 12-13
- Incandescent Seminar: August 16
- Fluorescent Seminar: August 15
- H.I.D. Seminar: August 14
- Emergency/Exit Lighting Seminar: August 13

Osram Sylvania's Lightpoint
- Lighting Essentials: May 20-22; August 26-28; November 18-20
- Lighting Design and Applications: October 7-9
- The Energy Focus: September 23-25
For more information, call (508) 750-2464.

Philips Lighting Center
- Lighting Design and Application Workshop: April 15-18; September 9-12; November 11-14
- Lighting Technology Update: June 3
- Retail Lighting: June 10-11
- Commercial Lighting Seminar: October 21-23
For more information, call (908) 563-3600.

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Who invented the first undercabinet light?
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Who pioneered high-mast interchange lighting?
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Who designed the first swing-arm lamp?
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Who delivered 9½ miles of fixture to one building?
Booth 635, Lightfair 96

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IALD AWARDS TO BE HELD IN SAN FRANCISCO ART MUSEUM

In addition to exhibits and seminars, a special event of note is the 13th annual IALD Lighting Awards presentation dinner, cosponsored by the International Association of Lighting designers and Architectural Lighting. This year’s winners, among 124 entries, will be awarded on May 16 at the San Francisco Museum of Modern Art (see feature story, page 34). Tickets are U.S. $90 and can be purchased through Lightfair registration by calling (800) 856-0327, or faxing (214) 248-8700.

Judging for the IALD awards was held on March 8 at the Pacific Energy Center in San Francisco. Respected professionals from the architecture and lighting design communities judged the entries on their aesthetic and technical merits.

LIGHTFAIR PROGRAM ANNOUNCED

The annual Lightfair International trade show and conference will be held May 14-16 at Moscone Center in San Francisco. Exhibit hours for the show are 10:00 am-6:00 pm May 14 and 15, and 9:00 am-5:00 pm, May 16. Following are highlights of the Conference Program and Special Events at Lightfair:

TUESDAY, MAY 14
8:30-10:00 am
• New Product Showcase, sponsored by Architectural Lighting and interLight
10:45 am-12:15 pm
• “HID: Highly Imaginative Design”; speakers: Steve Brasier, Patricia Rice, AIA, IES
• “Volumetric Brightness & Other Recent Findings in Office Lighting Quality”; speakers: Hayden McKay, FIALD, FIES, AIA, Dr. Jennifer Veitch, IES
• “Let’s Talk Shop: Retail Display Lighting”; speaker: Chip Israel, IALD, IES, DLF
12:30-1:45 pm
• The Nuckolls Fund Luncheon Seminar
2:00-3:30 pm
• “Understanding the Materials of Lighting: Aluminum and Plastics, Their Processes and Properties”; speaker: Gerry Zekowski
• “To Retrofit or Redesign? That’s the Question”; speaker: Alan Suleiman
• “A Thing of Beauty: Artwork Lighting & Preservation”; Steven Helferan, IALD
3:45-5:15 pm
• “Understanding Photometry”; speaker: Sam Berman
• “Enough Energy Savings Already: A post Occupancy Evaluation”; speaker: Naomi Miller, IES, IALD
• “Designers are from Venus, Contractors are from Mars”; speaker: John Levy

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**WEDNESDAY, MAY 15**

9:00-10:30 am

- **Integrating Lighting & Architecture**; speaker: Randy Burkett, IALD, IES
- **Energy Today: Update 1996**; speakers: JoAnne Lindsley, IALD, IES, Jim Yorgey, Peter Bleasby, Jeffrey Johnson, Douglas Malone, Dan Schultz
- **"From the Roadway to the Driveway: Exterior Site Lighting"**; speaker: Sandra Stashik, FIES, IALD, PE, IFMA
- **"Theatrical Lighting Techniques for Non-Theater Environments"**; moderator: Jean Gorman; speakers: Theo Kondos, IALD, Bill Schwinghammer, Hervé Descottes, Steve Rosen

10:45 am-12:15 pm

- **"Darkness Visible: Lamps in Exterior Applications"**; speakers: Mark S. Rea, IES, Naomi Miller, IES, IALD
- **"Energy Up the Bottom Line: Economic Considerations for Road and Interior Lighting Systems"**; speaker: Prof. Luciano Di Fraia, IES
- **"Rooms with a View: Lighting Kitchens & Baths"**; speaker: Nancy McCoy, IES, DLF
- **"A Candle at Night is Brighter than the Sun"**; speaker: Luc Lafontaine

12:30-1:45 pm

- **SF Designers Lighting Forum Presentation**
- **EPA Green Lights & Energy Star Buildings Presentation**

2:00-3:30 pm

- **"Working Together: The Team Approach to Design"**; speakers: Brian R. Cournoyer, AIA, Brian Liebel, David Geyman, Daniel Desmond
- **"Do Your Homework: Lighting for the Home Office"**; speaker: Jane Grosslight, IES, ASID, AID, NKBA

**THURSDAY, MAY 16**

9:00-10:30 am

- **Answered Prayers: Lighting for Houses of Worship**; speaker: Raymond Grenald, FAIA, FIES, FIALD, EPRI
- **Team CADD—Bridging the Gap**; speaker: Michael Hooker, IES
- **There's No Place Like Home: Remodeling Lighting for the Home**; speaker: Randall Whitehead, IALD, ASID affiliate

10:45 am-12:15 pm

- **Fine Dining: Restaurant Lighting on High & Low Budgets**; speaker: Bradley Bouch, IES
- **Designing Yourself**; speaker: Marilyn Mondzjar, ASTD, ASAE, IABC
- **Energy-Efficient Home Lighting Design**; speaker: Russell P. Leslie, AIA, IES

2:00-3:30 pm

- **Office Lighting for the Late '90s**; speaker: Mitchell Kohn, IALD, FIES
- **Lighting Maintenance Issues**; speaker: Stefan Graf, IALD, IES
- **On the Homefront—Residential Controls**; speaker: Glenn M. Johnson, IES, IALD
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ENCORE PERFORMANCE
Enhanced Aesthetics, Energy Advantage At Highlands Inn

By Christina Trauthwein, Executive Editor

CHALLENGE The elegant Highlands Inn, located on Northern California’s scenic coastline, has played host to both celebrities and vacationers throughout its 80-year history. But while the sophisticated Inn is steeped in tradition and rich in history—its lighting is up-to-date, relying on state-of-the-art technology for its success.

In 1984, lighting designer Michael Souter redesigned the Inn’s lighting, a project that earned GE Lighting’s Edison Award for excellence and quality in lighting design, in addition to architectural and interior design awards. In 1994, he was called back to address a new set of priorities: Use the latest lamps and fixtures to save energy and enhance the unique charm of the Inn.

“My objective was to improve upon the existing lighting design and its efficiency without sacrificing aesthetics,” said Michael Souter, principal and president of Luminaire Souter Lighting Design, a Proven Alternatives company. The San Francisco-based firm successfully blends innovative design with energy-efficient lighting—the Highlands Inn being one such example.

DESIGN/TECHNICAL CONSIDERATIONS Design and energy management were both key to the success of the project. “The visual ambiance was as critical as energy savings,” said Souter. “Reflection, glare control, color temperature and quality enhancement were all important considerations.” The finished product had to project the image of a luxury resort.

METHOD By surveying and evaluating the existing lighting equipment prior to starting his design, Souter was able to identify many opportunities for upgrades to the quality and efficiency of the lighting system without replacing everything. Many of the improvements were made possible just by using new technology.

Souter developed a new lighting program that reallocated the available watts to maintain or reduce the 2W/sq. ft. maximum for the resort.

A complete lighting redesign in the guest rooms of the Highlands Inn enhances the new interior design. Semi-recessed adjustable fixtures with 50W PAR30 halogen lamps highlight artwork and illuminate activity areas; two semi-recessed 21W 2D 2700K compact fluorescent lamps light the entrance hall of each guest unit and provide ambient lighting. In each of the bathroom areas, Souter placed a translucent light diffuser over the tile vanity with an open wood grid and used a single 32W T8 SPX30 fluorescent lamp/electronic ballast package. Two custom pendant fixtures—one on each side of the grid—with twin 20W bi-pin halogen lamps and a dimmer light the sides of the guest’s face.

Existing fluorescent fixtures located in the soffits of the Inn’s majestic Main Hallway were retrofitted with new electronic ballasts and 32W triphosphor lamps (T8 SPX30), which provided better color rendering than the T12 lamp/magnetic ballast package they replaced. Aging 50W MR16 lamps in adjustable spots were changed to more efficient 35W constant color lamps, which provide white light and a high CRI over the life of the lamps with minimal lumen depreciation.

RESULTS The new system offers improved lighting, reduced energy consumption (as much as 5 percent) and a projected $6,000 in energy savings per year, which, coupled with a rebate from Pacific Gas & Electric, virtually paid the cost of the $15,000 project in one year.

The client was so pleased with the redesign that Souter said he’s been commissioned to develop a new “sculptural” lighting system for the Pacific’s Edge restaurant in the Inn, due to appear later this year.
At the San Francisco Museum of Modern Art (SFMOMA), the lighting design just might be the most creative work on display. The masterful blend of daylighting and electric lighting was developed to enhance the exhibits but never upstage them. The result is a highly effective solution that subtly paints the galleries with appropriate light for viewing art.

Housed for more than 60 years within the War Memorial Veterans Building, the SFMOMA now resides in a new, more spacious $60-million building designed by Swiss architect Mario Botta in association with the San Francisco office of Hellmuth, Obata, Kassabaum, Inc. (HOK). Fisher Marantz Renfro Stone (FMRS) designed the lighting for the main public spaces of the museum, including the atrium lobby and 50,000 sq. ft. of gallery space.

At a total of 225,000 sq. ft., San Francisco's museum is the second largest single structure devoted to modern art in the U.S. The museum is located in the city's downtown South of Market district and is surrounded by several other landmarks such as the Moscone Convention Center and the recently completed Center for the Arts at Yerba Buena Gardens.

The SFMOMA will be the site of the 13th annual IALD Awards dinner, cosponsored by Architectural Lighting magazine.

COURT DRAMA

The interior of the museum is flooded with natural light. The full-height central atrium court, dramatically illuminated by a 135-ft.-high skylit turret, is a key feature of the design. FMRS designed custom uplights, integrated into the top of a pedestrian bridge crossing the atrium, to reinforce the daylight. Four of the fixtures house 400W metal halide lamps and two are fitted with 400W HPS sources.

"At nighttime, it becomes this glowing eye to the city," said Mark Piuta, project architect with HOK.

"The ceiling in the atrium and adjacent corridors is a wooden slat grid that does not lend itself to recessed light fixtures," said Scott Hershman, senior associate at FMRS. "So we developed a twin-head fixture that is suspended from a single point."

The custom fixture houses two PAR38 lamps of differing wattages (150W and 250W) and is used for both general and accent lighting. Each open gimbal-ring fixture is adjustable on all axes and fitted with a cross baffle and spread lens. "It's possible to adjust the orientation of the fixture to align with the axis of the building while pointing the lamps in any direction," said Hershman, "but once the fixture is aimed, all adjustments are permanently fixed with set screws."

Each lamp is wired to a separate circuit to permit independent light levels for downlighting and wall washing.

In the adjacent boardroom, which also doubles as an events space, small 20W AR-12 lamps fitted with a glass ring bottom provide downlight and add sparkle to the space. Between each of the downlights are 2-ft. sections of track.

In the center of the barrel-vaulted space, a series of more than 20 Botta-designed pendants are fitted together and aligned to function as a single fixture. The fixtures use 100W line-voltage halogen sources. The fixture is designed to swing as a unit 45 degrees to either side to satisfy earthquake codes.

Visitors are drawn from the ground floor atrium court to the four floors of galleries above.

via a grand staircase, which itself appears to be a massive abstract sculpture. Rectangular recessed low-voltage 35W tungsten halogen wall washers, custom-designed by FMR, are incorporated into the stepped ceiling to illuminate the banded granite walls and light the stairs. Lenses are sandblasted glass, which provides soft illumination.

LIGHT GALLERY

Skylit roofs and a coffered ceiling offer generous natural light to the galleries, a design that complements the clean architectural lines of the museum and enhances the artwork. Most of the galleries are lighted primarily with natural light, but electric lighting controlled by an external photocell provides supplemental lighting when daylight is insufficient.

"We wanted all the spaces to feel bright, yet still maintain light levels in accordance with conservation criteria," said Hershman.

Daylight is introduced through textured glass skylights. In developing the daylighting system, the lighting designer built a model of a typical gallery and put it in a daylight simulation booth to assess how light was distributed in the space. The designer then constructed an on-site, quarter-scale model and gathered light level data over several months, taking differing weather conditions into account.

The final result was a system of fixed exterior skylights and internal acrylic diffusers that span the galleries and provide diffuse, room-filling light. The aesthetically pleasing white gull-wing or V-shaped light diffuser fits into the top of the glass-reinforced gypsum vaulted coffers and distributes the daylight, which is reflected from the ceiling vaults to the art walls.

The vertex of the diffuser unit contains supplemental fluorescent nighttime "environmental" lighting, as well as mechanical services such as sprinklers, occupancy sensors and smoke detectors.

Continuous compact fluorescent fixtures are located within the center of the diffusers and are used to uplight the louveres with a low-level wash of lighting. The fluorescents come on about 45 minutes before dusk to provide a luminous ceiling at night and are also used to supplement daylight on cloudy days.

All of the skylights are fitted with opaque fabric covers that snap into place when elimination of daylight is required. Directly beneath each skylight is a louver panel, fabricated inexpensively from standard stamped metal, that eliminates direct sun, allowing only north daylight to enter the skylight well.

Certain types of art cannot be displayed in daylight, such as works on paper, so there are some galleries that are not daylighted. Where non-daylit galleries are adjacent to daylight galleries, the ceiling is treated as an inverse vault and lighted by neon coves with 3500K color temperature. It has a daylight feel to provide continuity from one space to the next.

**Q:** How has the lighting industry/ lighting design changed in the last 10 years?

Some of the changes in the past 10 years have included:

- Widespread acceptance of triphosphor T8 and compact fluorescent lamps have allowed the designer to lock good color rendition into the design.
- Low-wattage HID technology has provided the designer with high color rendering alternatives for point source downlights.
- IC chips are making dimming systems smaller, more versatile and less expensive.
- Energy efficiency trends have forced us to rethink design solutions of the '80s and have regulated several sources out of the marketplace.
- The lighting designer is being recognized as an essential member of the design team in the European and Far East marketplace.

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**DETAILS**

**PROJECT** San Francisco Museum of Modern Art  ■ **LOCATION** San Francisco  ■ **OWNER** San Francisco Museum of Modern Art  ■ **ARCHITECT** Mario Botta in association with Hellmut, Obata & Kassabaum  ■ **LIGHTING DESIGNER** Fisher Marantz Rentfro Stone, Inc.

■ **ELECTRICAL ENGINEER** Pack & Kurtz  ■ **PHOTOGRAPHER** Richard Barnes  ■ **LIGHTING MANUFACTURERS** Creative Light Source; C.W. Cole & Co.; Kurt Versen Co.; Lighting Services Inc.

**APRIL/MAY 1996**
THE LIGHTING DESIGNERS FOR HASBRO DID MORE THAN JUST TOY WITH IDEAS WHEN IT CAME TO LIGHTING THE CORPORATE HEADQUARTERS—they listened to the clients, addressed Hasbro's diverse needs and came up with the perfect Game.

BY CHRISTINA TRAUTHWEIN, EXECUTIVE EDITOR

When it comes to the design of Hasbro Inc.'s Pawtucket, RI corporate headquarters, it's not just fun and games. While the well-known manufacturer might base its sales on the world of toys, the 300,000-sq.-ft. facility definitely promotes the image of serious business.

The lighting, designed by Light & Space (phase I) and Renee Cooley Lighting Design (latter phases), is a key factor in projecting a corporate presence and supporting Hasbro's strong identity in the marketplace to visitors. Diversity is the key. With many work environments under one roof—corridors, executive offices, meeting rooms, production spaces—the lighting design had to be flexible enough to address the needs of each one separately. Some areas required warmth, others energy and vitality, while some just needed to feel relaxed.

And yes, there are some playful aspects, too. After all, this is the company that brought us favorites such as Mr. Potato Head and G.I. Joe. In fact, these childhood treasures are prominently displayed in the archive corridor—and revered with respect.

"MAIN" OBJECTIVE

The interior, housed in a turn-of-the-century factory building, was redesigned in a series of phases to contain a two-story-high visitors' entry, feature corridors, enclosed private offices, open office areas and a presentation theater. The thrust of the design is a carefully planned "urban" layout that reinforces an active environment.

The facility is centered around "Main Street," which is bordered by various working "neighborhoods"—executive offices and meeting rooms. This central corridor, which serves as the employee entrance and primary passageway, is immediately identifiable to employees and visitors alike. The lighting team backlighted frosted glass walls, which separate the corridor from executive areas, to create the image of light-filled lanterns lining the "street."

"We were able to create two effects in two different areas with one lighting system," said Renee Cooley, principal, Renee Cooley Lighting Design. "The reflected light contributes to the interior lighting and the transmitted light contributes to the corridor lighting."

Fluorescent uplights illuminate Main Street's sawtoothed skylit ceiling, replacing the natural daylight after hours.

FIRST PLACE

A distinctive selection of Hasbro's classic toys are showcased in glass cases in a nearby archives corridor, which serves as the main artery between the visitors' entry and the executive office/meeting areas located just off Main Street.

The items, some of Hasbro's firsts, are illuminated by track fixtures to create a dramatic effect, and to draw visitors into the space and toward the glowing display windows. PAR38s on a surface mounted track are aimed at the display case columns to highlight letters which spell out "Hasbro" (see photo left).

"In this particular area, as with other feature areas, Hasbro wanted a more dynamic environment that would create an executive impression on visitors and clients," said Emily Monato, principal, Renee Cooley Lighting Design. "The lighting had to be less uniform, more dramatic and effectively enhance the richly textured surfaces and higher quality finishes, fabrics and furnishings with excellent color rendition."

Quartz wall washers, surface mounted on the ceiling of the conference room on the other side of Main Street, cause the oversized lanterns to glow and also serve to light inside the conference room.

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IN CONTRAST TO THE EXECUTIVE AREAS OF THE FACILITY, SUCH AS THE CONFERENCE ROOM (ABOVE LEFT), THE PRODUCTION SPACES ARE BRIGHTER AND MORE SPACIOUS. HIGH COLOR RENDERING LAMPS, WITH COLOR TEMPERATURES CLOSE TO DAYLIGHT, CREATE A VIBRANT AND DYNAMIC ENVIRONMENT IN WHICH TO WORK (ABOVE RIGHT).

OPEN FOR BUSINESS

"In open office areas, the goal was to provide a visually clear, spacious environment that would appear as volumetric in its lighting during non-daylight hours as during daylight hours," said Cooley. "Furthermore, since the area encompasses a large volume of open space, the lighting system had to be consistent and clean in its approach and appearance."

While the Main Street areas primarily utilize incandescent sources, the open office areas employ fluorescents to address energy efficiency and the balancing of daylight. Moreover, the open areas utilize a more uniform pattern of light to enhance spaciousness and visual clarity, and to emphasize the ceiling and workplane. "Additionally, vertical illumination highlights feature walls to add rhythm and interest," said Cooley.

Much of the space is illuminated by daylight coming through north-facing skylights. Cable-suspended, direct/indirect fluorescent fixtures within the module of the bays supplement the incoming daylight during daytime hours and provide the main illumination during overcast days, evening hours and in areas without skylights.

The design team opted for 3500K fluorescent lamps to approach the brightness of the daylight. The pendants, suspended from the purlins of the ceiling structure, are located 11 ft. on center.

"The main runs of the ductwork are coordinated with the lighting fixtures so that both of these elements fit into this open ceiling environment in the most compatible way," said Cooley. "The pendants can be switched locally as well as be controlled by a building management system, empowering employees to directly control their work environment."

Fabric sails filter incoming daylight, and when appreciable daylight is absent, they’re backlit by compact fluorescent wall-washers in track fixtures mounted on architectural columns behind the fabric. At dusk, or when the sky is overcast, the sails glow to create a shimmery effect.

Although a standard fluorescent color temperature was established at 3500K, special areas where color matching is critical are illuminated by 5000K/95 CRI lamps. These large open spaces are modulated by narrow connecting passageways and waist-high filing banks. Semi-custom aluminum incandescent pendants (referred to as tin-hats because of their shape) are suspended from a piece of unistrut, which runs parallel to the cabinets. The fixtures
are spaced 3 ft. apart and are located about 18 in. off the surface to deliver localized task light to the cabinets below without interfering with the workers.

In addition, they "intersperse personality throughout the space and keep it in touch with human scale," said Cooley.

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** INDIRECT FLUORESCENT LIGHTING BALANCES DAYLIGHT IN OPEN OFFICE AREAS (DRAWING, LEFT) AND ADDS UNIFORMITY AND VISUAL CLARITY TO THE OVERALL SPACE. Fabric sails filter incoming daylight (ABOVE).**

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**DETAILS**

**PROJECT** Hasbro Headquarters  ■ **LOCATION** Pawtucket, RI  ■ **OWNER** Hasbro Inc.

■ **ARCHITECT** Kusabara Payne McKenna Blumberg Architects—Shirley Blumberg, principal-in-charge; Walter Duschk, assoc.-in-charge  ■ **ARCHITECT FOR ARCHIVAL MUSEUM** Poior McMillan  ■ **LIGHTING CONSULTANTS** Renee Cooley Lighting Design—Renee Cooley, Emily Monato, principals; Light & Space—Peter Barza, principal; Renee Cooley, senior designer  ■ **EXHIBIT DESIGNER** Joseph Wetzel Assoc.  ■ **ELECTRICAL ENGINEER/ELECTRICAL CONTRACTOR** Boulos Robinson Inc.  ■ **GENERAL CONTRACTOR** Dimeo Construction  ■ **PHOTOGRAPHERS** Steve Rosenthal, Warren Jagger

**LIGHTING MANUFACTURERS**
Lightolier: Elliptipar; Reggiani; Halo Lighting; Norbert Belfer; LSI; Staff Lighting; Day-O-Lite; Lightning Bug; Modular Int'l; Michael's Lighting

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**Q: HOW HAS THE LIGHTING INDUSTRY/LIGHTING DESIGN CHANGED IN THE LAST 10 YEARS?**

There seems to be a greater willingness for companies to try new consultants. The bottom line has become so tight that a difference of a few hundred dollars in a bid can mean the difference between being on-board or being left behind. Although client/consultant relationships do not seem as cemented as they’ve been in the past, this “shop-around” attitude has led us to several new clients who may not have tried us otherwise.

In addition:

• Budgets have gotten much tighter and “value-engineering” has become a common part of even small projects.

• Even rather small projects are “phased” or broken up into more manageable pieces where one phase is completed while funding for the next can be secured.

• Project schedules have become shorter, making the need for construction managers greater.

—Renee Cooley & Emily Monato
Sweet
V
arious bakery icons, such as a custom “wafer” and pastry nozzles, are part of the lighting system
in Cafe Paradiso. The design is anything but cookie-cutter, though. Rather, it’s the tasteful blend of fixtures and sources
that makes William Eberhard & William Mason’s lighting design just the right mix of fun and function. Cafe Paradiso
not only offers confections, it’s a visual treat as well. Consequently, this project has won both national and regional IIDA
design awards, as well as local and state AIA awards.

Cafe Paradiso, on the corner of East 12th and Chester Avenue in downtown Cleveland, was created when the building’s landlord sought to utilize
an unleased area of the building that had been vacated by a stock brokerage firm.

At a relatively small 3,500 sq. ft., the space was perfectly suited for an eatery, particularly since the building is located near the epicenter of Cleveland’s central business district.
Anxious to eliminate the “black hole” in the office/retail complex and elevate the profile of the building, the owner decided to convert the vacant space into a lively activity-oriented gourmet cafe that conveys energy and vitality.

With 15-ft.-high ceilings, full-height glass on two sides and a mostly white and neutral-colored interior, Cafe Paradiso presents itself as somewhat of a blank canvas, or museum-like backdrop, within which animated and floating figures provide the focus of activity and cleverly express the establishment’s many services and products.
"Our goal was to incorporate articulated architectural planes and elements into the space and then ‘paint’ it with light, creating comfort and interest while reinforcing the product display," said Eberhard, principal-in-charge, Oliver Design Group.

PLANE & SIMPLE

The ceiling is treated as a sculptural plane rather than a conventional singular plane for embedding recessed fixtures. Perforated metal panels—representing sifters or graters—rest within alternating bays of an existing 5 ft. x 5 ft. ceiling grid, maintaining an overhead plane without entirely concealing the sculptural qualities of the ductwork above.

"The metal bands create a human scale and also contain the eye to develop a lower, product-oriented focus while still permitting open views of the ceiling grid above," said Eberhard.

The metal panels are illuminated by reflected light, which allows them to be read, but not emphasized at the expense of user comfort at seating areas or product displays.

TOOLS OF THE TRADE

The lighting is balanced—but not uniform—in its distribution, a design philosophy that Eberhard carries into each of his projects. Designing the lighting so as to come from a variety of sources creates interest, according to Eberhard, and also "articulates the planar elements to define the edges of the space and elements within the space so that the perception of spatial volume is maximized for user comfort."

In Cafe Paradiso, light fixtures are suspended or integrated into dropped elements, varying the levels at which the lighting response animates the space. For example, Eberhard uses symbolic representations of the utensils utilized to produce baked goods and suspends them above the central island, around which the entire space is organized. A row of brass and aluminum conical light reflectors become pastry nozzles floating over a rectangular suspended drywall ceiling icing—or rather a simple porcelain lamp holder with exposed 60W A-19 lamps—"drips" from the nozzle through cookie-like cutouts in the dropped ceiling.

The metal pastry nozzle cones and lampholders are custom fabrications that utilize galvanized sheet metal with strap rings, which center the lampholders over the three circular voids that are cut through the suspended plane. The reflected lines of the cones form light stripes, which effectively point to the product display below and add sparkle to the space.

To lend more light to the food counter, a series of 150W PAR38 lamps in adjustable track fixtures are side-mounted onto the drywall wafer.

FOOD FOR THOUGHT

Nearby, an enormous copper/aluminum "cookie" disc, containing equally spaced, flash-mounted 75W MR16 lamps in the aluminum half, hovers above the cappuccino bar. "We decided to bisect the form, change the foil typology and drop the lamps into only one side to make the space, which tends to be very geometric and axial, more dynamic," said Eberhard.

This fixture is suspended from a circular drywall disc, representing a cookie-cutter form, and soars about 7 ft. above the finished floor. In addition to providing visual interest, the "cookie" offers visual identification, reinforcing the cafe's functions and the desired traffic flow—a racetrack-like configuration circling the island—without the need for
awkward or obtrusive signage.

PAR38s are located at the 12-ft. ceiling height over the seating areas and along the back wall where they illuminate a large, richly colored mural.

Incandescent strip lights, recessed in a cove along the perimeter wall, uplight the reflecting wall panels to create a soft glow that brings the eye back to the center island above the dry goods product display.

"Incandescent sources were selected to mix with daylight to provide a warm but balanced lighting spectrum to allow for the accurate perception of food products," said Eberhard. "In addition, incandescents were a key factor in promoting user comfort—and a warm and friendly atmosphere."

Excessive glare was eliminated by using many moderate-wattage lamps to control light output instead of utilizing a few powerful lamps that would have pushed glare to undesirable levels and dumped light in unmanageable and unfriendly quantities with eroded light quality, according to Eberhard.
HARD, HIGH-TECH LINES ARE ELIMINATED, SOFT SIMPLE GEOMETRY IS ADDED TO CREATE A SOOTHING ATMOSPHERE THAT HELPS THE E.R. AT ST. MARY'S PASS THE STRESS TEST

BY CHRISTINA TRAUTHWEIN, EXECUTIVE EDITOR

Just like every other hospital, the emergency room at St. Mary's Health Center in St. Louis certainly sees its share of action. But what it doesn't see is the cluttered chaos so typical of many health care institutions. Rather, fluid architecture, warm colors and a well-planned, controlled lighting design create a tranquil environment, alleviating stress amongst staff, calming patients and promoting peace of mind for waiting families and friends.

The ER department, a two-story, 13,600-sq.-ft. addition with 18 treatment rooms, is part of Project 2000, a five-year, $41 million master facility plan to expand and modernize the 1920s hospital. Architect Mackey Mitchell Associates teamed up with lighting designer Lam Partners Inc. to develop an ER marked by timeless, not trendy elements—a strategy that firmly enhances St. Mary's standing in the competitive health care market. The result is an ER with beautiful, simple geometry and clear spatial organization.

The architect incorporated a curve motif into the design to soften the look and take the edge off things a bit. "It's a beautifully clear composition," said Paul Zafriou, principal, Lam Partners Inc. "In fact, the architecture is so simple and well organized that the lighting just flowed naturally—it practically lighted itself." The design won a 1995 regional design award from the Illuminating Engineering Society of North America, honored for its "good use of color, and understated and restrained design that is never cold."

TEAM SPIRIT

The final design was a collaborative effort. The project team gathered with hospital staff and visited other emergency rooms in the area to research the layouts and assess both positive and negative design aspects. The plan for St. Mary's became clear: The many functions of an ER necessitated that the lighting and architecture blend to create a crisp, bright and understandable sequence of spaces appropriate for a medical facility. So many other institutions fail to do this, adding to the chaotic circumstances that already exist within the walls of an emergency facility.

According to Zafriou, lighting objectives were to:

• create quality spaces with economy
• use lighting to clarify spatial organization
• keep it simple, yet effective
• provide maximum energy efficiency and minimum maintenance (a hospital dictum)

In addition, it was important to create a sense of warmth and visual comfort appropriate for an ER department, without having the residential feeling of a recovery wing. The ER must remain professional, yet maintain a calm, comfortable environment.

FULL CIRCLE

A certain sense of tranquility is immediately instilled in patients upon their arrival at St. Mary's. The exterior of the ER is clearly marked by a large concrete circular entry canopy. This simple defining shape acts as an easily identifiable landmark both day and night, creating simple optical guidance and eliminating the need for the often noisy montage of con-
fusing signs typical of many ER entries.

During evening hours, the exterior canopy provides a bright arrival point for medical emergencies. For high color rendering, Zaferiou selected incandescent downlights, side-mounted for reduced fixture height; all other facility lighting is fluorescent to reduce operational costs and maintenance.

The circular form of the entry canopy acts as the springboard for the spatial composition, and is a signature of the building, according to Eugene Mackey, FAIA, principal, Mackey Mitchell Associates. Inside, the layout and architecture maintain the feeling of comfort by echoing the entry canopy’s smooth rounded edges—a form synonymous with relaxation.

In addition, earthy materials, such as brick and maple wood, add a sense of warmth to reduce the institutional atmosphere. Ambient light is maximized in key areas such as the entry reception and nursing station. Both the triage desk and the registration area use reflected light and frosted glass to soften the look. Uplighting and wall washing create brightness and comfort without glare.

The entry to St. Mary’s emergency room is marked by a circular entry canopy (opposite). The round shape of the concrete structure is an easily identifiable beacon and sets the tone for the interior. The waiting room (above) echoes the gentle curves, softening the look of the space and creating a soothing environment. At night, the lighting enhances the warm tones of the room, and during the day (inset), sunlight fills the space.

**CENTRAL STATION**

The emergency suite is organized in a simple square. Each of the 18 patient rooms is equidistant from the centrally located circular nurses’ station, providing open access and visual control. St. Mary’s previous ER was linear in design, making visibility and accessibility to treatment rooms difficult.

Above the station, a round coffered ceil-
ing, reminiscent of the exterior canopy, is uplighted with T8 fluorescents to deliver high-level ambient lighting. Additional downlights and built-in task lights service the work counters. A structural column intersects with the coffered ceiling, breaking the coffer into four quadrants and adding visual interest.

Moving beyond the nurses’ station into the corridors, the light lowers, creating a soft transition zone, then brightens when approaching the treatment rooms. These changes in lighting intensity help staff focus on what’s happening in the ER work area. Ten-ft. wide corridors, which provide enough space for smooth circulation, are illuminated by recessed compact fluorescent downlights. Zaferiou chose cross baffle styling rather than open aperture to minimize glare—an important consideration for patients being wheeled on beds.

A square coffer encribes the entire nursing station, “floating” the edge of the ceiling away from the walls that enter the treatment rooms. A fluorescent wall slot provides glare-free illumination for circulation around the station and expresses the organization of the ER by adding brightness to the whole suite and delivering a soft wash and spill light onto the entrances to the treatment rooms. Lamps are tucked above the ceiling so that the light source is completely concealed. In the treatment rooms, the lighting is very utilitarian: Recessed lensed 2x4 fluorescents deliver high-level, uniform downlighting to supplement surgical lights. Each room has a window to the outdoors—a link to the outside that keeps staff in touch with nature and helps reduce stress during the marathon hours.

GREEN PEACE

The waiting room, which is adjacent to the entrance, is oriented toward a tree-lined courtyard. A gently curved floor-to-ceiling window fills the waiting area with a generous amount of soft, natural light. In addition, it provides views to the outdoors, permitting visitors a mental break from the anxiety they’re probably experiencing. Simple cutoff parking lot fixtures in short-term parking spill light into the adjacent landscape at night, allowing clear views to the landscape 24 hours.

Light levels in the waiting area are deliberately lower than in the circulation areas. A simple fluorescent cove lights the ceiling and balances the daylight, “We consciously didn’t put a cove directly in front of the window because at night we didn’t want to turn the window into a mirror,” said Zaferiou. Instead, the cove is located toward the center of the waiting room to avoid a bright edge at the glazing. The ceiling takes an additional step which corresponds to the window wall curve to contain the uplight and reduce the ceiling thickness at the perimeter, according to Zaferiou.

Compact fluorescent downlights (3000K) provide additional reading light and enhance the warm tones of the room. An aquarium and lighted literature niches adorn the brick wall, again creating a pleasant distraction and positive focus.

Architectural styles come and go—sometimes in cycles—but lighting technology over the past decade has made steady progress in its quest for improved light sources. Advances in fluorescent and metal halide technology continue to replace incandescents in more and more applications. With operating budgets for all sorts of facilities in decline, lamps with longer life, lower wattage and good consistent color are in big demand.

In particular, the replacement of incandescent A-lamps with double or triple compact fluorescents using regular and dimmable electronic ballasts has had a major impact. Also, the development of color temperature consistency among fluorescent and metal halide lamp families has improved overall project appearance both inside and out. It seems that just when we settle on a lamp/fixture combination that works well for a specific application, an improved source or new fixture comes out that opens up new possibilities.

It’s a challenge to stay current and essential to evaluate new lamps and fixtures prior to specification. Above all, these ongoing improvements keep lighting a dynamic part of the design process.

—Paul Zaferiou
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Researchers continue efforts to establish the link between lighting and productivity. The result may be new "quality metrics" that will change the way we specify lighting.

You have a meeting with a client who represents a large corporation. After stating your expertise, the facility manager asks if you can also reduce energy costs in his company's 20-year-old headquarters building. You explain that you can save roughly $35,000 per year on his electric bill. Then, after a calculated pause, you add that with a professional, high-quality lighting redesign, you will increase his profits by another $500,000 per year by increasing productivity, it's scientifically provable...

Just before the facility manager signs the check, you wake up smiling.

Since the 1920s, proving the link between lighting and human performance has been a dream of the lighting industry. But never until today has the pressure been so great to establish that link. Unfortunately, the dream remains elusive—it would be extremely difficult to absolutely prove causality, then make a productivity prediction accurate for any given client. But the industry as a whole is moving toward finding metrics that at least enable lighting professionals to assess a luminous environment for quality, and to calculate the results of higher productivity resulting from lighting quality—so long as we accept the assumptions.

These tools will certainly help focus the entire industry on lighting quality as an ideal for lighting projects, and help designers make the case to facility managers who need in turn to make a case to senior management.

**PRODUCTIVITY PERSPECTIVES**

Productivity is a measure of human performance on the job, taking into account comfort, satisfaction, safety, speed and accuracy. Productivity as a dollar value to the client is ultimately measured in efficiency, accuracy and absenteeism. Lighting quality in retail spaces also can be related to sales. It is known that lighting can play a part in image, mood, safety and security.

What does this mean to corporations? In a 1990 survey of large office buildings (see Figure 1), the average operating cost per sq. ft. for workers' salaries was $130, the lion's share of the average total operating budget. A modest consistent increase of even one percent, therefore, increases profits significantly.

Unfortunately, productivity is known to fluctuate wildly between 50 and 200 percent at any given time for many reasons—factors such as relationship with the boss, problems at home, the car breaking down, bills and so on. In addition, the architecture and interior design of the space may impact visual comfort more so than lighting. But lighting plays an important supporting role, in that 80-85 percent of our impressions of the world are visual, and light is necessary to vision. It naturally follows that lighting affects the impression.

"A common example I like to point out to people who ask me about the emotional effects of lighting is the old Hitchcock movies," said Robert Levin, PhD, senior scientist for Osram Sylvania at the lamp manufacturer's worldwide Lighting Research Center in Beverly, MA. At the Center, Dr. Levin studies lighting and human factors.

"In these movies, the physical space does not change, but mood is affected because of only a few changes, one of which is lighting."

The National Lighting Bureau, located in Washington, D.C., published *Lighting And Human Performance: A Review* in 1989, which concluded that "lighting affects human performance in two ways: directly and indirectly. The direct effects occur because lighting alters how well we can see, either by changing the stimuli to the visual system or by changing the operating state of the visual system. The indirect effects occur because lighting can alter attention, alter arousal, mood and behavior; and modify the body's hormone balance."

The report compiled research that includ-
ed studies demonstrating that diseased meat can pass inspection under poor lighting, that better lighting helps compensate for aging eyes, that lighting can attract and direct, and that low lighting levels can influence occurrence of seasonal affective disorder (SAD). Copies of the report and other NLB publications are available by calling (202) 457-8437.

**FINDING THE VALUE**

"Quality lighting is desirable, but corporations and institutions still need more education about its benefits," said Barbara Barker, product manager for the Columbia Architectural Division of COPM Lighting. "It's interesting that many clients still see carpeting, for example, as more important than quality lighting, paying a premium for durability, comfort and aesthetics of the carpet, while being satisfied with outdated lighting technology. Today, twice as many lensed troffers are installed as parabolic fixtures."

Barker believes that clients can be convinced to include and defend value-added quality lighting in their budgets if they understand the real costs of poor productivity related to poor-quality lighting.

"If the client accepts the basic assumption that a quality lighting design featuring value-added lighting products can result in higher productivity than poor-quality lighting, then costs can be assigned," she said. "Mistakes, slower production, lost work days—together, we can make assumptions that can be assigned costs. By asking the right questions, and assigning costs to poor-quality lighting, a quality lighting design and system can keep paying for itself and adding to the bottom line for many years to come."

**ENTER THE PIONEERS**

In the 1920s, Western Electric Company conducted productivity research at its Hawthorne Works in Chicago. The results were published by the Harvard University Press in 1939 under the title Management And The Worker. At the plant, light levels were gradually increased. Worker productivity increased steadily. Further experiments to validate the results, this time using test groups, began to show that something was awry. The efficiency of the control group working under a constant light level increased at the same rate as the test group whose light levels were increased. To follow up on this, the researchers slyly had an electrician replace the lamps in one space in front of the workers, but the new lamps produced the same light output as the old lamps. The "placebo" worked—the occupants said they liked the "brighter" lighting. In reality, the workers seemed to like being in an experiment and/or appreciated that management was concerned about working conditions. This attempt to please the experimenter, or react positively to an expressed management interest in their welfare, became known as the Hawthorne Effect—and demonstrates that test subjects must be completely naive.

For decades, the prevailing hypothesis concerning light and productivity was of the “more light, better sight” school of thought. The higher the light level at the task, the greater the visual acuity, the greater the efficiency and accuracy of the worker. The other desirable component of basic lighting design was to keep unwanted glare from the field of view and distribute light uniformly.

In the 1970s, former General Electric employee John Flynn began conducting his own research that studied satisfaction and comfort with the total luminous environment, focusing on subjective impressions of visual clarity, spaciousness, relaxation, privacy and overall pleasantness. Starting a lighting graduate program at Penn State University, he studied people's impressions of different lighted spaces. He concluded that people prefer environments with light on the walls and ceiling. He also concluded that lighting can attract and direct occupants. In one 1973 study, one half of a coffee bar was lighted by wall washers. Customers chose the darker part of the room, facing the lighted walls. When the wall washers were moved to the other side of the room, customers again sat in the darker part of the room so as to face the lighted walls. A new dimension to lighting quality research began here, as Flynn explored visual comfort and preferences to the total luminous environment rather than simply the quantity of illumination on the workplace.

Several years ago, Flynn's research was supported by a PacificCorp study at the Lighting Design Lab in Seattle. Four identical small offices were constructed. Douglas Designs was contracted to develop three different energy-efficient lighting designs for three of the offices, and a traditional design for the fourth. The participants in the study were asked to report their reactions after experiencing each environment. Short-term test participants completed brief pencil-and-paper tasks. Long-term test participants completed several tasks that included a proofreading test, number entry into a spreadsheet, text typing, reading comprehension and an eight-state mood test.

A majority of the participants found that 35 feet was too low for the desktop tasks. Most preferred lighting in the 45-55 ft range. The participants also preferred more indirect lighting with some direct downlighting and with uniform distribution on all surfaces. Most preferred a more aesthetic fixture. According to the study, "They generally did not like a direct downlight strategy and, in particular, did not like deep-cell parabolic direct downlighting in the small office environment... They felt more relaxed at softened light levels." It is interesting to note that in the eight-state mood test, "results indicated participants [in the traditional office design mockup] test that significantly more anxious, stressed, depressed and regenerated." What's also interesting is that there were few productivity variations among the four offices.

**THE ANECDOTAL EVIDENCE**

Most research in lighting and productivity, however, has been anecdotal in a case study form. The NLB for years has been dedicated to promoting productivity benefits of better lighting in its publications and to sharing case studies with the media. Similarly, the Rocky Mountain Institute, located in Snowmass, CO, published *Greening The Building And The Bottom Line:* Increasing Productivity Through Energy-Efficient Design in 1994. This was timely, as many facility managers were beginning to question whether lighting retrofits were adversely affecting productivity. A few of the case studies cited in the publication include:
An upgrade at Lockheed’s engineering development and design facility resulted in $500,000 per year in energy cost savings, plus a 15 percent increase productivity and a 15 percent drop in absenteeism.

At a new West Bend Mutual Insurance facility, an upgrade slashed energy costs by 40 percent while increasing claim-processing productivity by 16 percent.

At Wal-Mart’s prototype Eco-Mart, one-half of the store employed enhanced daylight via skylights. The result? Sales were “significantly higher” in that half than the other half of the store.

(Note that the case histories do not mention potential poor maintenance practices prior to the retrofits, which may overemphasize the benefits of retrofitting.)

The Rocky Mountain Institute’s publication is available by calling (970) 927-3851 or faxing (970) 927-3420.

WHERE TO FROM HERE?

“Human beings are obviously very complex,” said Dr. Levin. “For this reason, it is difficult to isolate lighting as a deciding factor in performance when there are so many other factors involved, unless the lighting problem is extreme, such as harsh glare.” He said that for this reason, most research in productivity has been anecdotal (as shown above), revealed as case studies that show a link that is apparent but ultimately unprovable.

Dr. Levin added that another problem with productivity studies is that the lighting improvement may not persist, that people will adapt. Therefore, he noted, a method-analysis study must be long-term to be successful, then it must be repeated at another location to verify the results. “Lighting factors must be independent for a study to be credible. The environment and population must be controllable. Many factors should be changed, such as lighting, tasks, ergonomics, heating, cooling and ventilation. This could take years. Once the results are determined, another study must be undertaken in a different place with another population.”

Dr. Levin said that research in some form will continue, noting the current high level of interest in linking lighting and productivity. “There is a push for something to happen,” he said.

What we do have to work with are the commonly accepted components of lighting quality, including light level, glare and light distribution. In recent years, to a minor extent audible noise from fluorescent electromagnetic ballasts has been attributed to irritation and headaches, allegedly curable with high-frequency electronic ballasts. Light level calculations are developed partially based on speed and accuracy. We can say that proper light levels avoid a negative impact on speed and accuracy. But comfort and satisfaction have remained elusive to predict.

New lighting research, however, may allow designers to predict visual satisfaction with a luminous environment in the future. We’re not talking about the Visual Comfort Probability (VCP) rating of fixtures, which is a determination of what percentage of the population would be likely not to be irritated by glare from a regular array of fixtures in a given room size. VCP is used to assess relative “comfort” of two fixtures.

What we’re talking about instead is the movement toward a quality metric, the work of two leading associations that could lead to dramatic results in professional lighting design.

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THE QUALITY METRIC

“We want to change the way lighting is specified,” said Naomi Miller, director of the DELTA program at the Lighting Research Center in Troy, NY and chair of the Illuminating Engineering Society of North America’s (IESNA) Quality of the Visual Environment Committee (QVE).

Miller was describing the joint work between the QVE and the International Association of Lighting Designers’ (IALD) Metrics of Quality Committee (MOQ) that seeks to identify important factors of lighting quality and lay the groundwork for research that would quantify the quality metrics for use by designers.

“Our ultimate goal is to provide values that will help designers and engineers specify more comfortable, pleasing luminous environments,” said Miller.

The Committees’ research to date has been exploratory via workshops, but the road ahead is mapped out with longer tests, more formal experimental designs and naive subjects to evaluate their impressions of various lighted spaces. What has emerged so far is that a holistic design factor coined “volumetric brightness”—which describes the overall brightness of all room surfaces in the field of view—may be as important as desktop light levels in offices. The result may be both to add another engineering dimension to design of quality lighting as well as validate the true value of quality lighting.

“We’re moving beyond the footcandle,” said Miller.

She added, “Task visibility is important psychologically, even physiologically. But while people may be happy with 50-75 fc, it’s even more important to provide proper reflectances, brightness and distribution to achieve true occupant satisfaction.”

Just one example, Miller pointed out, is a room lighted with fluorescent troffers shielded with “paracube” parabolic louvers. While sufficient light levels on the desktop may be provided, some people find such environments “cavelike,” she said—but added that they can be dynamic environments with a little supplemental light added to the ceiling plane and walls.

Miller, Hayden McKay and Peter Boyce, PhD presented the Committees’ initial findings at the 1995 IESNA Conference in New York City. The paper was published in the Proceedings. To get a copy of the paper, call the IESNA at (212) 248-5000.

INTO THE FUTURE

While many organizations are now pointing to a connection between lighting and productivity, other industries are promoting similar connections in the areas of indoor air quality, acoustics and ergonomic office furniture and equipment. Together, these factors are sometimes interrelated in a term called total indoor environmental quality. The good news is that ongoing education from many sides—such as case studies—is helping clients of professional lighting services understand that quality lighting can play a direct role in their workplace strategies. When offering a valuable service, what can be better than an educated consumer? We can hope and expect that this will mean clients will size their lighting budgets appropriately and ensure that professional lighting services are contracted. In the business world of the 1990s, the smarter companies are realizing that increasing productivity is much more important and of longer-term benefit than the most dramatic cost-cutting and downsizing. This has the potential to make the lighting professional an essential player in building design and renovation.
THE POWER OF THE SUN
Integrating Daylight And Electric Light

By Barbara Erwine, Contributing Editor

As corporations and institutions increasingly want natural, environment-friendly and energy-efficient indoor environments, nothing delivers quite like the sun. A recent survey of corporate employers showed that the availability of daylight is one of the most important elements of their "ideal workplace" (Architecture, October 1993). Conservation, human enjoyment, the bottom line—they all point to daylight as a critical element of contemporary lighting design.

That's where the challenge begins.

True integration of daylighting and electric lighting bridges the work of the architect, lighting designer, daylighting consultant and electrical engineer. Unfortunately, many daylighting projects fail due to a compartmentalized rather than an integrated design approach. Deferred to the final stages of design, "integration" is often merely a synonym for the addition of electronic controls to turn off electric lights when daylight is abundant.

Daylight and electric light...How these two sources work together, or against each other, determines the success of the lighting design—whether it creates a cohesive luminous experience or whether the two lighting systems contradict each other and fight for attention. In this discussion, we will examine the many elements of an integrated design approach.

DESIGNING FOR DAY AND NIGHT

Lighting orients us, directs our attention and influences our moods to make spaces feel playful, magical, spacious or some other desired effect. These experiences are created by anticipating and controlling what surfaces the electric light and daylight illuminate, how they're focused, their color characteristics and their relative intensities in the space. In addition, daylight changes with the time of day, time of year and weather conditions. Electric light, though intrinsically static, can also take on a more dynamic nature through the use of controls to create lighting moods appropriate for uses throughout the day.

Spaces with both daylight and electric light have the opportunity for two different lighting moods—a daytime one created with both forms and an evening/nighttime one with electric light alone. The lighting design can exploit the temporal nature of daylight and create dramatically different experiences from day to night. At night, electric lighting may highlight different aspects of the space, changing the accent and focus, making surfaces advance or recede in light, or transforming the space from a cheery to a cozy atmosphere. Restaurants,

The difference between day and night: The Board Room at the Frank Russell Headquarters changes dramatically in color quality, sense of enclosure and focus between daytime and nighttime lighting scenes.

Barbara Erwine is Daylighting Specialist at the Lighting Design Lab, a facility sponsored by the Bonneville Power Administration and other northwest utilities to promote the use of daylight and energy-efficient lighting in the Pacific Northwest.
residences, spiritual spaces all have exploited these effects to change the scene with the passage of daylight.

In contrast, the use of a space may dictate a uniform ambiance over time. In an office setting, the work mood and tempo stay constant as daylight waxes and wanes. Here, the electric light can mimic the way daylight is delivered to the space, increasing in intensity gradually as daylight recedes. Light levels and mood are maintained whether daylight is present or not. Electric light is used for task and accent purposes frequently in this scenario, but daylight and electric light share the function of ambient lighting. To do this well, the electric lighting must be designed and zoned to respond to the intensity of distribution of daylight across the space.

As an example, let's look at the Emerald People's Utility District (EPUD) building, where relative daylight levels across the space were calculated (see Figure right and next page). The office areas are daylighted by a combination of perimeter windows with lightshelves and internal clerestory glazing. The daylight contours run parallel to the window walls. The electric lighting is designed to follow these parallels. The first row of electric lighting is actually incorporated into the end of the lightshelf. Additional rows of pendants continue this parallel deeper in the space. Since the daylight intensity varies with the distance from the window wall, the rows of electric light are individually photocell-switched in response to the local light levels.

To achieve a smooth transition between daylight and electric light, both sources should illuminate the same surfaces in the space. In the EPUD example, the daylight reflects off the lightshelf and lights the ceiling of the space. Mimicking this performance, indirect electric pendant fixtures also uplight the ceiling, making the transition between daylight and electric light transparent to the occupants.

**UNDERSTANDING DAYLIGHT LEVELS**

Outside the building, daylight levels can peak above 10,000 fc and interior levels in direct sun can top 4,000 fc, potentially overwhelming electric lighting. The intensity of daylight must be clearly understood and controlled to work well with electric lighting. Daylight models, computer simulations and full-scale mockups are important tools for predicting both the quantity of daylight and its distribution across the space.

**MIXING THE MESSAGES**

If daylight looks too much like electric lighting, some of its side benefits may be lost. In addition to ambient light, daylight brings views and important information about weather, season, time of day and cardinal direction. If a skylight is covered with a lens that mimics the appearance of a 2x4 fluorescent lensed troffer, then the daylight, perceived as electric light, loses its vitality.

Conversely, the electric lighting may too
convincingly imitate daylight. A skylight with electric lights mounted inside it can simulate daylight in the middle of the night. Several lamps with varying color temperatures can even be incorporated to simulate sunrises and sunsets. These systems can give misleading environmental information about daylight levels, which can be experienced as either playful or confusing depending on how it is executed.

Many designs take a middle ground: Electric light mimics the functional, ambient portion of daylight while view windows maintain the correct information about environmental conditions. Some designs even provide separate daylight apertures for these two different functions of ambient lighting and view. The lightshelf on the EPUD building serves this purpose. It divides the window into an upper daylighting clerestory (for ambient lighting deep in the space) and a lower view window.

**Playing with Colors**

Although the color of an electric light source may be specified and relatively constant (ignoring gradual, predictable changes over the life of the lamp), the color of daylight is complex and dynamic. It changes at different times of the day and year, and fluctuates based on weather conditions, pollution levels and building orientation. This variable color texture contributes to the delightful vitality of daylighted spaces.

Except during the sunrise and sunset hours, daylight falls toward the cool (blue) end of the color spectrum. Sunlight is about 5000K in color temperature; an overcast sky is 6500-7500K; and a clear blue northwestern skylight peaks above 20,000K. Tinted glazings also alter the spectral transmission of daylight and affect
Its color temperature. Green tints move the transmitted daylight to a cooler temperature. Bronze moves it warmer. Gray tints have the least effect on color.

Color temperatures of electric light are generally warmer, ranging from about 2700K for incandescent light up to 7500K for daylight fluorescent. Though a particular color temperature is initially specified, it may change as the lamps age or as they are dimmed. Examples: Metal halide lamps increase in color temperature when dimmed (an effect minimized for coated lamps), while incandescent lamps decrease in color temperature.

Because of daylight's bias toward cooler color temperatures, attention is drawn to the electric lights when their color temperature is very low. This can be used to an advantage with decorative fixtures and is exaggerated with the use of brass near the lamps. When the opposite effect is desired—making the electric light blend neutrally with daylight—some designers recommend using very high color temperature lamps. But we respond differently to daylight and electric light, and many people aren't comfortable with crisp blue interior electric lighting.

Obviously, the choice of color temperature is a personal preference. My own preference is to stick closer to the color temperature palette we traditionally design with and avoid extremes that might alter the ambiance of the space. One may choose to move the color temperature selection slightly higher in response to the daylight. Example: If we usually work with 3000K, move to 3500K. But it is equally important to be consistent in the color temperature of the electric lighting (inconsistencies draw attention) and utilize electric sources with a high color rendering index rating (CRI > 80) to complement the inherently high color rendering capabilities of daylight.

**INTEGRATION AND CONTROL**

As the lighting scheme is translated into architectural elements and fixtures, the design should integrate, not merely layer, the components for each system. "Shared fixtures" like the EPUD lightshelves, which also incorporate the first row of electric lights, reduce the number of components, minimize cost and ensure compatibility of systems. New products now in development are combining windows and skylights with electric lights, reflectors, light pipes and controls for integrated delivery systems. In the future, these systems can be purchased and installed as a unit.

The electric lighting will have to be controlled, and this presents aesthetic, transition and energy-saving opportunities. Daylight harvesting controls that switch or dim electric lights in response to daylight save energy and improve lighting quality by reducing overlighting during daylight hours. Monitored buildings have demonstrated lighting energy savings of over 50 percent with the use of daylighting controls. When lighting design is approached in the integrated way described above, the design holds within it the logic necessary for the application of controls. As noted for the EPUD building, since the electric lights are aligned to follow the daylight contours, they are also optimally arranged to be switched or dimmed in response to the daylight.

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**MARKET SNAPSHOT**

According to the International Teleconferencing Association, in 1995 the number of two-way interactive videoconferencing rooms in the U.S. doubled from 1992 to over 15,000. Reasons for the popularity—the specialized phone lines needed are more available, and equipment costs have dropped. But most importantly, videoconferencing saves corporations money by slashing travel and increases productivity by saving time.

To access videoconferencing’s capabilities, a company can either rent a facility from a provider such as Connexus (Dallas) or VideoNet (Essex, MA), purchase a portable package, engage a network of powerful personal computers or build its own on-site facilities for $40,000-$100,000+. In this discussion, we will focus on videoconferencing rooms, although many of the same general lighting principles apply to all options.

**THAT’S “LIGHTS! CAMER A...”**

Most issues involving quality lighting deal with how effective an environment is in creating the desired visual sensation. With videoconferencing, there is little room for compromise. While the human eye is able to adjust to light levels from less than a tenth of a foot-candle under moonlight up to 10,000 fc under sunlight, the videocamera’s electronic “eye” isn’t nearly as forgiving. An inappropriate lighting design that fails to meet the delicate demands of the videoconferencing environment will create a poor image for the communicator as translated by the electronic eye, defeating both the purpose and the investment in expensive technology.

As an example, we can recall Senator Bob Dole’s much-criticized response to President Clinton’s State of the Union address earlier this year, after which Dole blamed the lighting for making him look haggard. Dole told Newsweek, “You know lighting. Lighting can kill you” (Feb. 5, 1996).

**LIGHTING TECHNIQUE**

“Bringing communicators face to face electronically adds an important visual dimension to communication,” said Chris Ripman, RA, IES, IALD, president and principal consultant of Ripman Lighting Consultants of Belmont, MA. “But the camera’s eye is very dependent on the quality of lighting—beam control, distribution, source brightness, glare, brightness ratios, absolute light levels—for depth perception, facial rendering and an overall pleasant presentation of the conferee.” Ripman identifies four major issues to consider when lighting a videoconferencing facility, in addition to the criteria of standard lighting practice, and notes that these issues should transcend lighting into interior design as well.

1. **How the space is used.** Is the communication interactive and intimate, or primarily one-way (training, for example)? What is the maximum number of conferees in a typical session? Consider other uses of the room, keeping in mind that most videoconferencing rooms also serve non-videoconferencing uses.

2. **Light levels and quality.** Our challenge is to add depth and dimension to what is translated by the camera into a two-dimensional image. Flattering vertical illumination must be provided on the faces of conferees. Background surfaces within the camera’s field of view must be appropriate in detail and texture as well as appropriately lit. According to Ripman, 5-10 fc is usually sufficient for the camera to pick up a single face, but 50-70 fc may be needed to create sufficient depth of field to capture all conferees in a large room. Conferee/background brightness ratios should be kept between 3:1 and 5:1. Lighting sufficient for videoconferencing requirements will usually provide adequate illumination for horizontal tasks on the table surface such as reading and writing.

Ripman notes that complete control over color balance is easily achieved with today’s video technology, so the designer can use any color
temperature desired. Experience shows that 3500K fluorescent lamps combine well with halogen to create color contrast in the transmitted image.

3. Brightness and glare. The most common enemy for both the human eye and the camera's eye is direct disability glare. Even relatively low-brightness sources such as fluorescent can cause a problem if they fall within the camera's field of view because they affect the automatic exposure balance of the recorded image.

4. Lighting equipment. Indirect fluorescent powered by high-frequency dimmable electronic ballasts are found to be well-suited for ambient lighting and wallwashing, and can be an excellent glare-free source for definition of the conference when complemented by point sources used for key lighting. The dominant vector of lighting on the face should come from both sides of the face at an approximate 45-degree angle in both plan and a 60-degree angle in section (or greater). Parabolic fluorescent downlights can be used, especially where room layout is flexible, though Ripman has found that the inclusion of indirect lighting generally enhances the space for the occupants. Shielded fluorescent sources can be placed in the conference's field of view, if desired, with minimal glare due to the source's relatively low surface brightness.

PAR and MR16 lamps are ideally suited for key lighting, which defines the conference's silhouette, adding dimension, depth and separation from the background, as well as desirable sheen and highlights to the conference's hair. Ripman prefers halogen for long life, energy efficiency and cooler color temperature. Lighting from directional sources such as these should never fall on the camera lens directly.

Multiple layers of lighting can be controlled by preset dimming systems or a series of manual controls. The preset system affords maximum user ease and permits instant access to the full range of lighting scenes that may be required during a videoconferencing session—such as AV projection, conference presentations, videoconferences and standard meetings. Preset camera control systems (tilt, pan, zoom) are also available, and can be interfaced directly with the lighting control system.

"Videoconferencing facilities are intensive, demanding multitask environments," said Ripman. "As such, they present the lighting designer with a challenging set of problems and limitations—and a rewarding opportunity to make a significant contribution to the quality of communication. The easier technology is to operate, the more it becomes transparent—receding into the background and leaving the user empowered to communicate effectively, supported rather than hampered by the environment."

**HARCOURT**

At the new world headquarters of Harcourt General in Chestnut Hill, MA, Ripman worked with architects Phil Seibert and Rico Cedro of The Stubbins Associates and AV consultant Ric Bayly to create an IES and ASID award-winning facility. They worked together closely to ensure that the room and lighting designs evolved toward an integrated solution.

By introducing a sculptural CFRG ceiling element—nicknamed the "Stetson Hat"—which repeats the oval shape of the custom pearwood table below and creates a central vertical axis for the room, Ripman was able to conceal almost all light sources from view while providing effective facial definition and a dramatic, flexible palette of lighting effects to suit the various uses of the room. A preset lighting control system integrated with the touchscreen system controls not only lighting, but also motorized window shades and AV projection systems (slide, video, document camera and auxiliary remote camera).

In Teleconferencing Mode, all systems in the room operate at full output (see Figure 1). Above the rim of the hat, a curved run of "ramp" high-output compact fluorescent fixtures provides ambient light for the room by reflection off the ceiling. The key to the room's success lies within the hat: Two curved runs of similar fixtures, concealed behind the floating "hatband," provide 70 fc of glare-free indirect lighting on the faces of conferences (see Figure 2). Background brightness is achieved via dimmed lensed two-lamp 18W compact fluorescent wallwashers and downlights, concealed from normal viewing angles by the rim of the hat.
In Presentation Mode (see Figure 3), general lighting is dimmed while MR16 lamps in deeply baffled fixtures in the hat brim create task lighting on the table below. PAR36 VNSP lamps are used to create focus on the perimeter and the podium. Fixtures are positioned to minimize veiling reflections on the rear projection screen behind the podium.

In Meeting Mode (see Figure 4), wall illumination is decreased and “central axis” elements (dimmed fluorescent within the hat, dimmed T6 incandescent concealed in the lip of the table, and the MR16 downlights) are brought up to create a central focus for the room.

This room, the result of an intense and interactive collaboration between architect, lighting designer and audiovisual consultant, has been well received by the owner and is in daily use, with lighting and architecture providing effective and unobtrusive support for communication of all types.

**CITICORP OFFICE**

Citicorp, parent of Citibank, a global financial company with operations in 97 countries, wanted to update the boardroom at its New York City headquarters to include multilocational videoconferencing in addition to non-video meetings and slide presentations. The challenge was to provide this capability while preserving a traditional boardroom appearance. There could be no visible indication of video capability, especially at the ceiling level. The project was undertaken by Swanke Hayden Connell Architects and Renée Cooley Lighting Design of New York City. (Video consultant was Peirce Phelps, Inc., Philadelphia.)

With the overall vision understood, the design goals were developed:

1. Deliver at least 60 fc on conferee faces and 20 fc on background surfaces during videoconferencing using a combination of halogen, standard incandescent and fluorescent light. This was the highest illumination level that could be hoped for without adding ceiling fixtures directly over conference table.
2. Retrofit as many existing fixtures as possible to produce more light.
3. Update the dimming system.
5. Use standard fixtures that are in stock.

Renée Cooley Lighting Design applied three layers of lighting to the room, starting with a series of dimmable incandescent downlights that put light on the conferees’ faces and provided task light. The existing architectural cove was fitted with a combination of high-output and standard fluorescent lighting that would provide indirect light as ambient fill to soften shadows and erase hot spots on conferees’ faces and heads. Finally, dimmable linear incandescent slot and wallwashers were specified on the room’s perimeter to minimize contrast between conference and background, add depth and provide task lighting for any observers. (See Figure 5.)

“The challenge of this project was to light an executive meeting space that could architecturally transform into a videoconferencing center, demanding a new set of lighting capabilities from the same lighting system,” said Emily Monato, principal of Renée Cooley Lighting Design. “Our solutions were carefully planned and the result of teamwork.

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ARCHITECTURAL LIGHTING
"The exact placement of fixtures was carefully coordinated with the furniture design and placement, the monitor locations and degree of tilt, and the three camera locations," she said. "All of the fixtures were assigned to one of a dozen zones on the dimming system so that the critical final light balancing could be done easily and precisely."

Monato pointed out that A-lamp downlights, with help from the high-output fluorescent cove, are capable of delivering 55-65 fc, and 80-110 fc, when the room serves as a videoconferencing space (see Figure 6). Perimeter walls receive 18-28 fc, from halogen wall-washers at full output.

For non-video meetings, the halogen wall-washers are dimmed to 60 percent with the high-output fluorescent lamps in the cove extinguished and the standard fluorescent lamps in the cove lit (see Figure 7).

The perimeter lighting adjusts up and down based on video or non-video need, as shown in both Figures 6 and 7. Some perimeter light, said Monato, is essential around monitors to help balance screen brightness with surrounding surfaces.
At night, the cityscape is a sea of lights. The montage of outdoor lighting in many ways defines the city’s character at night, defines the community, defines each building, brings nature into sculpted view. After grimacing at the orange glare of municipal (low-bid) street lighting, we pause to appreciate a building meticulously sculpted with concealed sources. Some buildings are awash with light, others reveal efficiently highlighted key architectural features. In many ways, outdoor and landscape lighting plays an integral role in mankind’s quest to “scorn the darkness” and beautify the world around us.

In the realm of design, exterior lighting provides an arena in which the lighting designer is set free to implement an arsenal of new-fangled technologies, expanding the old bag of tricks. The selection of industry improvements now available includes new light sources, more reliable ballasts, increased availability for multi-voltage applications, and a wider variety of ingeniously designed light fixtures. In this article, we will discuss some new developments in outdoor and landscape lighting and elements of a successful design.

DESIGN CONCEPTS

Surprisingly, some facilities professionals still believe that the purpose of outdoor lighting is simply for security and safety. Luckily, many conservation commissions across the country request that designs for commercial/industrial property developments blend in harmoniously with the existing landscape. This is where lighting designers can use their technical knowledge, pure imagination and intuitive design skills to make an architectural statement with light.

Proper planning is essential. The first step is to fully understand the environment to be lighted, the architectural features, the age of the area, the general demographics. An on-site visit, perhaps with a camera, could be helpful. Back at the office, the design process is fairly straightforward. Selection of fixtures, light sources and the electronic components is fairly easy when designing street or pedestrian lighting. Lighting properties and their adjoining landscapes is quite a different story, however, as system selection is not always a simple matter of floodlighting and a few bollards. The current state of the art combines technologies. Whether using line voltage, low voltage or the current “rage” of fiber optics, the design project can succeed only after much preparation and simulation.

In-depth preparation and planning often requires several passes at a number of scenarios before any final decisions are reached. All of the approaches may share common concerns such as cost, maintained uniformity, quality, extraneous light control (light pollution) and heightened visual/color acuity.

By varying the light source (wattage and family), the fixture type (direct, flood, spot, cutoff, landscape, wall pack, etc.), installation characteristics, and variety of product, the designer is faced with a significant task of sifting through piles of data. In many cases, the designer may utilize sophisticated computer software packages that can simulate the final results within minutes, saving countless hours. The process of scenario elimination generally features point-by-point calculations, a full analysis of life-cycle costing, construction scheduling and perhaps a fully lighted layout presented via a flying three-dimensional tour of the finished product.

A CLASSIC LOOK

Years ago, the use of gas lanterns dressed in swirling castings charmed the nighttime streets. Although gas lanterns has become extinct, the form of these fixtures has stood the test of time. These lantern-style fixtures have reappeared in abundance in many of America’s founding cities. The classic looks in the lines of Hadco, Holophane, Wellsbach, Whatley and others...
help to create a nostalgic look in the modern urban nightscape. During the daylight hours, these classically styled fixtures sport a look that fits into the city culture. During the evening hours, the mix of aesthetics and improvement in visibility at dusk transforms the darkness to urbanite safety.

**The Space Age**

For those desiring a slick, space-age fixture design coupled with seemingly impeccable photometric performance for general site/lot lighting, the ever-present shoe-box design has been evolving. New shapes and distributions, variations on the original cobra-head design, utilize advanced optics to control beamspread, glare and spillage.

The modified cobra-head family is flanked by another group of fixtures carrying descriptors such as Contracline, Pericline and Conquest, utilizing inverted conical reflectors. All fixtures within these families are designed to improve the visibility through control of glare and enhanced uniformity.

**Landscape Opportunities**

Landscape lighting offers homeowners the

### Tips for Great Outdoor Lighting

1. Work with manufacturers that “specialize” in the product. This will save several steps, possible embarrassment and much heartache by receiving proper technical support.

2. Get the right technical advice. Not sales! Obtain fixture photometry on disk, or use the manufacturer’s representative for basic calculations.

3. Perform a bench-top examination of the actual fixtures, looking for quality of workmanship, types of materials used, electrical components, optical components, the finish of the housings, the fixture’s overall aesthetic appeal and the maintainability of the components. If possible, visit actual installations to ensure the product lives up to its advertising.

4. The light source should be selected to enhance the natural colors of the objects to be lighted without offending the observer. Landscape fixtures need to be concealed, nearly invisible during the daytime.
means to enhance and personalize their landscapes and driveways with well-placed pools of light. The large home outlet stores sell several varieties of do-it-yourself kits, many made by cheap "bang 'em out" manufacturers. Only the authentic high-quality products designed and manufactured by companies such as Architectural Landscape Lighting, Bega, Fiberstars, Hydrel, Intermatic, Kim Lighting, Lumiere, Sterner, Stonco and others offer built-in reliability.

One design consideration in landscape lighting is whether to use line-voltage or low-voltage fixtures. The benefits of low-voltage systems are found in the low installation cost via direct-burial wiring, ease of installation, simplicity of control, high-CRI sources and the rugged construction of the fixtures. There are some minor disadvantages, however. There are not many choices outside slight variations on the toad-stool mushroom theme. Low-voltage sources are generally limited to low wattages and may require the addition of line-voltage sources for supplemental lighting. What's more, the wiring should still be run below the frost line (not necessary, but good practice). In contrast, line-voltage systems allow us to bring line voltage to any point along the installation route, giving the convenience of an installed electrical outlet (NEMA 3R enclosure) in the middle of the garden or next to the pool. The choices are fairly broad and can satisfy most design appetites.

The most interesting developments in landscape lighting have come from a relatively new application for a technology popularized during the psychedelic era. Next to the "lava-lamp," the glass fiber sculpture was one of the more fascinating toys of the era. No longer a toy, fiber-optic lighting is now a powerful tool for landscape designers. The benefits of fiber-optic lighting in landscape applications include no heat, no electricity, simplified maintenance and ease of use in wet applications.

Companies making innovative products with a support system to match are few. Companies such as Fiberstars and LSI, among others, offer outstanding value and performance. Continuing advances in light sources are making the choice of fiber optics more attractive than ever. Watch for the Philips QL lamp with a 60,000-hour rated life and the "sulfur" lamp to make appearances in the light engine area.

Fixtures materials today include more aluminum than steel, and not much plastic. According to Anne Robinson of Omni-Lite in Burlington, MA, we're seeing "not much plastic due to how it reacts with cold weather .... UV-stabilized acrylics are more brittle and don't hold up as well. Polycarbonates are more stable in outdoor weather." There is a trade-off as polycarbonate tends to yellow over time. Of course, there are certainly other (more natural) choices available for fixture housings.

In area lighting, the trend is toward using more metal halide light sources than high pressure sodium sources. This is due to improved lamp stability and efficacy.

Once installed, landscape lighting should appear to emulate filtered moonlight.

Select components that simplify installation and reduce maintenance costs.
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The radiant energy emitted by a light source capable of producing a visual sensation, what we commonly call luminous flux or "light output," is measured in lumens, a unit developed in the 1920s. However, the lumen is based on sensitivity of components of the human eye under daytime light levels. Under lower nighttime light levels, the eye's sensitivity to color and detail is different, particularly in regards to peripheral vision. While researchers in the 1950s developed a separate set of values for nighttime vision, light sources continue to be specified today for parking lot, security, roadway and other nighttime applications based on the lumen.

"For daytime light levels, such as standard office tasks, the lumen works well," said Mark Rea, PhD, director of the Lighting Research Center in Troy, NY. "But the eye shifts in spectral sensitivity as light levels are reduced to those typical for night vision. Under night vision, for example, the eye is much more sensitive to spectral colors at shorter wavelengths, such as blue."

According to Dr. Rea, research conducted at the Lighting Research Center will be provided to the Illuminating Engineering Society of North America (IESNA) for consideration on how to address nighttime vision with a mesopic (nighttime) lumen rather than the traditional photopic (daytime) lumen. A mesopic lumen is a blend of scotopic (rod) vision and photopic (cone) vision—rods and cones being components of the human eye.

Should the research be accepted and published in the next edition of the IESNA's Lighting Handbook, Dr. Rea predicts there will be a major transformation in how outdoor lighting—particularly roadway lighting—is specified.

"Not only will we see nighttime lumens published for outdoor sources, but new efficacies will result, with bluer and whiter light sources coming out on top," said Dr. Rea. "New light sources will likely be developed, but more significantly, standard high pressure sodium light sources now considered more efficacious than metal halide will be less than half as energy-effective as bluer metal halide."

"In the future," he added, "we predict that metal halide will be king of the roadway."

The three major lamp manufacturers, said Dr. Rea, have already begun jointly sponsoring continued research in this field, with an eye on developing new products.

Dr. Rea will present findings at this year's IESNA Conference in Cleveland, but advance copies of the report are available now by calling the Lighting Research Center at (518) 276-8716. ■
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This special presentation of state-of-the-art lighting equipment, which appears in the publications of the Commercial Design Network—Architectural Lighting, Contract Design and Facilities Design & Management—includes information on a range of products from decorative and outdoor fixtures to lamps. The names, addresses and telephone and fax numbers of manufacturers have been listed in addition to reader service card numbers.

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Product Shown: Fiberscape paver lighting uses end-emitting fiber optic fixtures as points of light to create designs, outline areas or indicate direction. Fiberstars' paver lighting is ideal for walkways, courtyards, patios, waterways and sidewalks. The small fixture size allows the lights to make the statement, not the fixture.

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Product Shown: In compliance with EPACT legislation implemented last fall by the federal government, GE Lighting has developed a unique, 100 percent halogen product family strategy for the PAR38 lamp category. The family includes varying wattages of GE's Standard Halogen, Halogen Plus and Halogen-IR lamps, each of which delivers a combination of crisp, white light, excellent color rendering, significant energy savings and length of life. The products also operate without diodes, allowing flicker-free performance.

CIRCLE No. 112

KIM LIGHTING INC.

16555 E. Gale Ave.
P.O. Box 1275
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Tel.: (818) 968-5666
Fax: (818) 369-2695

Product Shown: Kim Lighting's Entablature fixture is constructed of heavy diecast aluminum and designed for strength, performance, permanence and application flexibility. The fixture will complement any rectilinear architectural design. A custom look can be achieved by adding optional entablature trims. Ten standard entablature trims and custom trims are available. Entablature is offered in two sizes: The larger ET is available in 175-400W metal halide and 150-400W HPS, the smaller in 70-175W metal halide and 70-150W HPS. UL-listed.

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Tel.: (818) 362-9465
Fax: (818) 362-6548

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CIRCLE No. 113

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Tel.: (908) 225-0010
Fax: (908) 225-0250

Product Shown: The Vittoria T1 features a simple, clean task lamp design. Oval-shaped, layered Murano glass diffuser sits atop a polished chrome V-structure and weighted base. A 200W halogen lamp, shielded with a frosted glass tube for light diffusion and safety, provides upward, ambient task illumination. A slide dimmer on cord allows for light output control.

Transitional design for residential, corporate, bank, restaurant or hospitality settings. Companion wall, pendant and floor designs also available. Finishes include chrome base with satin white, amber, red, iridescent green or cobalt blue glass.

CIRCLE NO. 116

LEXALITE INTERNATIONAL CORPORATION

Product Shown: New from Lexalite: 12-in. diameter tinted prismatic shades. Available in ruby, cobalt, emerald and topaz. These polycarbonate shades are unbreakable, safer than glass and ideal for lighting in restaurants, cafes, hotels and retail settings. Larger diameter shades and sconce versions are also available.

CIRCLE NO. 117

LIGHTING SERVICES, INC

2 Kay Fries Dr.
Stony Point, NY
10980-1996
Tel.: (914) 942-2800
(800) 999-9574
Fax: (914) 942-2177

Product Shown: Lighting Services Inc., manufacturer of track, accent, display and fiber optic lighting systems, has introduced the new Metal Halide Spotlight and Cylinder families of fixtures. These fixtures are designed to accommodate all PAR20, PAR30 and PAR36 metal halide screw base lamps, including Philips MasterColor lamps which offer long life, warm 3000K color and a high CRI of 81-85. The specification quality, adjustable focus fixtures are available in LSI black, white and silver finishes and will accept a complete range of lenses and accessories.

CIRCLE NO. 118

LUCIFER LIGHTING COMPANY

414 Live Oak St.
San Antonio, TX 78202
Tel.: (210) 227-7529
(800) 879-9797
Fax: (210) 227-2967

Product Shown: Portable vertical track lighting which locates between floor and ceiling. Adjusts to varying heights. Can be installed in five minutes. Ideally suited for window display lighting and office/reception lighting. Select from a range of spotlights, including Coro glass shade version shown, using quartz halogen lamps, 50W maximum, ETL-listed.

CIRCLE NO. 119

LUMIERE DESIGN & MFG., INC.

31360 Via Colinas, #101
Westlake Village, CA 91362
Tel.: (818) 991-2211
Fax: (818) 991-7005

Product Shown: The '700 Series of HID landscape lighting fixtures utilize the recently introduced Constant Color metal halide PAR lamps PAR20 (35W) and PAR30 (35W and 70W). With mounting options for trees, flush-to-the-ground and surfaces, the '700 Series can properly illuminate buildings, flag poles, signage, sculptures and landscapes. The Series 700 is chemically undercoated and thermoplastic-polyester-powder painted so that the chosen fixture color—architectural mineral bronze, jet black or verdigris—remains unaffected by dramatic changes in weather. UL-listed.

CIRCLE NO. 120

MANNING LIGHTING

P.O. Box 1063
1810 North Ave.
Sheboygan, WI 53082
Tel.: (414) 458-2184
Fax: (414) 458-2491

Product Shown: Manning Lighting's new Designer Collection catalog features hundreds of pendants, wall sconces and ceiling fixtures to enhance creative vision. The DP-36 (pictured) is available in brass, chrome or painted finish and incandescent, fluorescent and HID lamping options. All Designer Collection products are UL-listed.

CIRCLE NO. 121
Product Shown: Neo-Ray Lighting’s Series 201P Shell indirect luminaire features soft contours, recessed die-cast ends, cast-joiner hanger details and perforated sides. Other components include a high-performance two-lamp 78 optical system and a 10½ in. wide x 2½ in. high profile with integral ballast. UL-listed.

CIRCLE NO. 122

PHILIPS LIGHTING COMPANY

Product Shown: Philips Lighting Company’s low-mercury ALTO fluorescent lamp technology has been added to its premium T12 Ultralume Econ-o-Watt line and its moderately priced T12 SPEC Econ-o-Watt line, offering the benefits of mercury source reduction and increased disposal options. The Ultralume Econ-o-Watt line features ALTO lamp technology in four F40 lamp models that provide color temperatures of 3000K, 4100K and 5000K. In addition, all three Philips F40 SPEC Econ-o-Watt lamps now contain ALTO lamp technology: the SPEC30, SPEC35 and SPEC41, offering color temperatures of 3000K, 3500K and 4100K, respectively.

CIRCLE NO. 124

SPI LIGHTING, INC.

Product Shown: The Opera Series combines low-profile housing, a unique rebound reflector system and sophisticated accessories. Indirect illumination is provided by three or six high-lumen output compact fluorescent lamps. A 2-D fluorescent lamp provides dome/downlight illumination. Complementary sconces, wall and ceiling mount fixtures are available for consistent design throughout the space. UL-listed.

CIRCLE NO. 126

OSRAM SYLVANIA, INC.

Product Shown: Osram Sylvania introduces the Soft White Dulux EL a bright, fast-starting compact fluorescent light available in 15W, 20W and 23W. The Soft White Dulux EL registers a 3000K color temperature, producing a bright white light similar to halogen lighting. This product also has instant start with no delay. The lamp has a life expectancy of 10,000 hours. The design of the Soft White Dulux EL features triple-U-turn tubes, making the new compact light an ideal replacement for table lamps, recessed lighting fixtures, enclosed outdoor fixtures and almost any place an incandescent bulb can be used.

CIRCLE NO. 123

PRESCOLITE

Product Shown: Prescolite has announced introduction of Triple Tube Compact Fluorescent Downlights, a series of specification-grade recessed downlights designed specifically to use the new generation of high lumen output, highly energy-efficient triple tube compact fluorescent light sources. The result is a line of fixtures that optimize the high lumen output of these lamps without compromising glare. Full architectural dimming available with Prescolite’s Intellect electronic ballast. UL- and CSA-listed.

CIRCLE NO. 125

STERNER LIGHTING SYSTEMS INC.

Product Shown: Sterner’s new Infraron 8104 quartz precision floodlight offers an arena fixture with superior efficiency and excellent candela value. Features include unsurpassable photometric performance with a parabolic aluminum reflector system that provides high fixture uniformity. It includes three beam spreads—narrow, medium and wide. Design features include toolless, rear relamping for easy maintenance and undisturbed aiming angles, as well as easy-to-mount bracketry, adaptable to most catwalk ratings. The 8104R measures 16 in. x 14½ in. x 8½ in. UL-listed.

CIRCLE NO. 127
**TRENDS LIGHTING COMPANY, INC.**

2700 Sidney St.
St. Louis, MO 63104
Tel.: (314) 773-1340
Fax: (314) 773-5741

Product Shown: Trend's latest creation is a 24-in. molded acrylic diffuser with polished, satin or painted accents. Clear glass rods add elegance. Lamped incandescent, compact fluorescent or metal halide. ETL-listed.

**W.A.C. LIGHTING COMPANY**

113-25 14th Ave.
College Point, NY 11356
Tel.: (718) 961-0695
(800) 526-2588
Fax: (718) 961-0188
(800) 526-2585

Product Shown: W.A.C. Lighting, an accent and task lighting supplier, creates precision-crafted track lighting and low-voltage recessed fixtures engineered for residential and commercial applications. The W.A.C. line includes button lights, surface mounts and under-cabinet fixtures, housings, trims and transformers.

**VISA LIGHTING**

8600 W. Bradley Rd.
Milwaukee, WI 53224
Tel.: (414) 354-6600
Fax: (414) 354-5093

Product Shown: Innovation, performance and quality are combined at Visa Lighting for accessibility without compromise. U.L.-listed.

Basix offers two lengths, two diffuser shapes and three trim options. Visa also offers a full line of ADA-compliant products.

**WALDMANN LIGHTING COMPANY**

9 W. Century Dr.
Wheeling, IL 60090
Tel.: (847) 520-1060
(800) 520-1060
Fax: (847) 520-1730

Product Shown: Waldmann Lighting’s “adjustable arm” task lights are ergonomically designed to give users individual control over their working environment. Task lights are available in single, twin vertical and twin horizontal arm styles, ideal for small or large work areas. The twin horizontal model fits well under binder bin storage cabinets. Mounting options include a table clamp, wall bracket, table base and furniture panel brackets that fit into the slotted standards of over 60 open office furniture systems. Each task light includes a built-in parabolic louver. U.L.-listed.

This flexible Windows-based operating system offers simple point-and-click operation to choose lighting presets, combine rooms or schedule events for up to 15 Premiere processors in facilities from one to 480 rooms.
**CLASSIFIEDS**

**POSITIONS AVAILABLE**

**SPECIFICATIONS SALES**
The largest lighting manufacturer's rep agency in South Florida has two newly-created positions for specifications salespeople. Account responsibilities will include coverage of architects, electrical engineers, landscape architects and interior designers. Duties include sales presentations, assisting clients with design and layout, and introduction of new lighting technology. The successful candidate will possess either a four-year degree in lighting design, architecture, engineering, interior design or equivalent industry experience. Mail or fax your resume with salary requirements to:

Lighting Dynamics, Inc., 1715 SE 4 Avenue, Ft. Lauderdale, Florida 33316; Fax: 954-763-1503. All replies will be held in strict confidence.

**DIRECTOR OF SALES & MARKETING**

**elliptipar**, the industry leader in asymmetric lighting, has an immediate opening for a high energy sales and marketing professional. The successful candidate for this true growth opportunity will have a broad knowledge of the lighting industry and proven managerial skills. Respond in confidence, with salary history, to:

Sylvan R. Shemitz, CEO, elliptipar, 114 Orange Avenue, West Haven, CT 06516.

**GENERAL MANAGER-LIGHTING REP AGENCY**
The largest lighting manufacturer's rep agency in South Florida, representing some of the most respected names in the lighting industry, has a tremendous opportunity for a General Manager of inside sales and support operations. Responsibilities include daily supervision of a ten to twelve person staff involving quotations, customer service, accounting and applications engineering. The successful candidate must have excellent organizational, managerial and communication skills. Mail or fax resume with salary requirements to:

Lighting Dynamics, Inc., 1715 SE 4 Avenue, Ft. Lauderdale, Florida 33316; Fax: 954-763-1503. All replies will be held in strict confidence.

**LIGHTING DESIGNER**

Large multidiscipline consulting engineering firm seeking qualified lighting designer. Applicants should have 3-5 years experience in design of lighting systems, and a related degree. Current practice includes corporate, institutional and healthcare facilities. Qualifications needed include design, production, client contact skills and marketing. Extraordinary opportunity for right individual. Fax resume and other pertinent information to:

**PROJECT DESIGNER**

Premier Midwest lighting design firm has an immediate need for an experienced, motivated project designer with strong interpersonal skills to work in a creative and collaborative office environment. Lighting software experience preferable. Position requires a minimum of 3 years experience in lighting design. Excellent benefits. Send resume to: Schuler & Shook, Inc., 213 W. Institute Place, Suite 610, Chicago, IL 60610.

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Mail response to: WG/C-IP • P.O. Box 90610 Pasadena, CA 91109-0610
Or Fax 818-405-8818 • No Calls

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**CAREER OPPORTUNITY**

**INDUSTRIAL DESIGNER**
In this key role you must understand the elevator market and design cost effective products which satisfy the end user. Responsibilities include engineering via production CAD work and drafting, project management to follow jobs through to completion, design and estimating/research. Must be able to communicate effectively with shop floor personnel, vendors, subcontractors and the sales department. Need manufacturing knowledge including welding, metal forming, casting, auto cad. Prefer either mechanical engineering or architectural degree. Please respond with salary history to: Adams Elevator, 6310 West Howard Street, Niles, IL 60714. Attn: HR. Fax 847-581-2905

**BUSINESS OPPORTUNITY**

**SONLITE LIGHTING INC.**, A Sino-American joint venture specializing in manufacture of HALOGEN PAR lamps invites prospective distributors to promote U.S. market. With imported equipment and main material from U.S. we offer high performance/quality halogen lamps. Available: Par38/Par3G/Par20/Par16. Please call IB. +86-755-3114017; FAX +86-755-3317317; or stop by booth #1510 at 1996 LightFair

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<td>33. 132. 61</td>
<td>GUIDE</td>
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<td>Waldmann Lighting Co.</td>
<td>31. 133. 57</td>
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<td>Wyndham Hall</td>
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APRIL/MAY 1996
The ALADDIN LIGHT LIFT is an easily installed motorized lift system that raises and lowers chandeliers for easy cleaning and bulb changing...with just the turn of a key. Units are available in residential and commercial models to lift up to 700 pound chandeliers and up to 65 foot ceiling heights. Our remote installation possibilities allow for vaulted ceilings or mounting where no access is available above the fixture. It is the simple solution for every hard-to-reach chandelier.

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